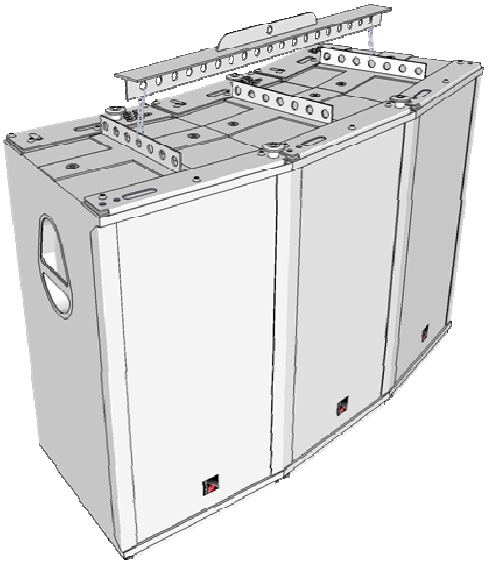
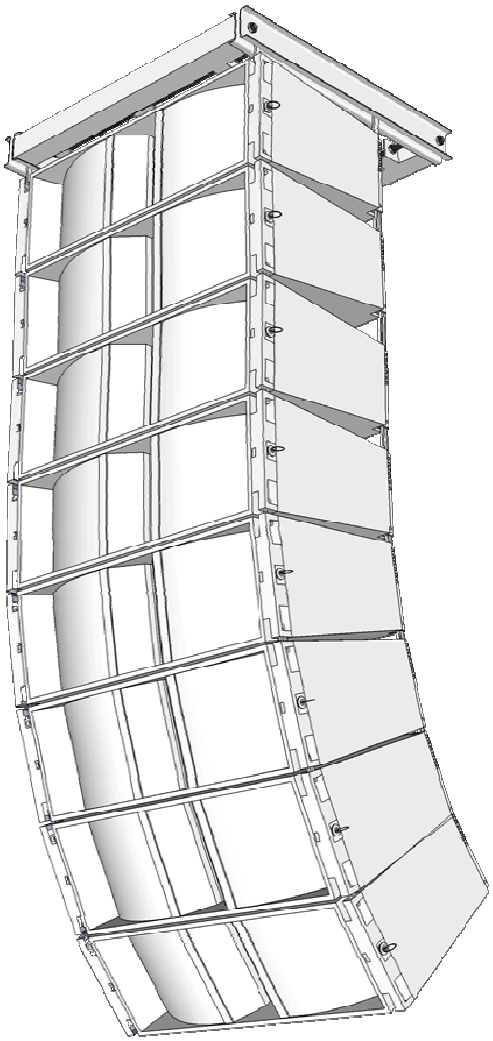
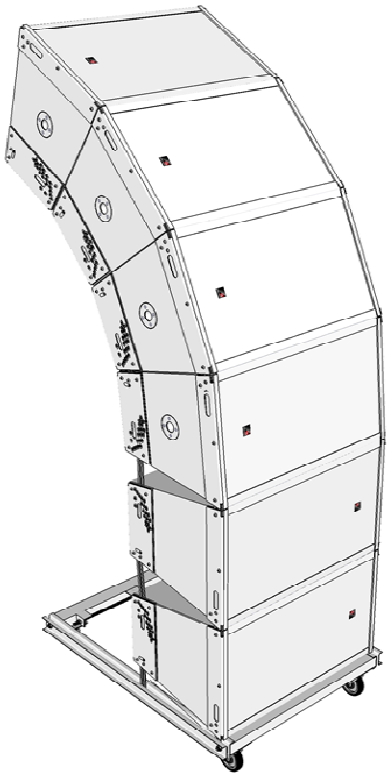
tecnare
sound systems







ARRAY/AMS SERIES USER'S MANUAL

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1 INTRODUCTION

Thanks for purchasing **TECNARE**. This product comprises the best quality designed to offer a professional use for many years.
Array series represent the highest professional approach to large and medium venues sound reinforcements, where the best standards are to be achieved. Common characteristics to all models are:

- Multiply Birch plywood enclosures.
- Highest quality speaker standards.
- Weather proof protection, both in speakers components and enclosures.
- Very high power capacity.
- Proprietary wave guide design.
- Hi-fi quality speaker response.

Active PCC advanced technology versions:
Self-powered systems of high efficiency and low weight.
Systems individually DSP controlled by software in real time.
Graphical Equalizer of 30 bands by acoustic box.
Parametric Equalizer of 10 bands by acoustic box.
Individual control of gain, solo and mute.
Individual Crossover of four bands Linkwitz Riley of 24dB/octave.
Individual Compressor-Limiter by band.
Variable delay on each band of up to 4 ms to adjust acoustic centers.
Communication network able to operate, in real time, with up to 64 boxes

2 SAFETY

Some terminals carry electrical current of sufficient magnitude to constitute a risk of electric shock. Use only high-quality commercially-available speaker cables with ¼" TS plugs pre-installed. All other installation or modification should be performed only by qualified personnel.

This symbol, wherever it appears, alerts you to the presence of ininsulated dangerous voltage inside the enclosure – voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual

To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel

These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. READ THESE INSTRUCTIONS

All the safety and operating instructions should be read before the product is operated.

2. KEEP THESE INSTRUCTIONS

The safety and operating instructions should be retained for future reference.

3. HEED ALL WARNINGS

All warnings on the product and in the operating instructions should be adhered to.

4. FOLLOW ALL INSTRUCTIONS

All operating and use of instructions should be followed.

5. DO NOT USE THIS APPARATUS NEAR WATER

Do not use the product near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

6. CLEAN ONLY WITH DRY CLOTH

Unplug the unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

7. DO NOT BLOCK ANY VENTILATION OPENINGS

Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the limit and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or similar surface. This product should never be placed near or over a radiator or heat

source. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacture's instructions have been adhered to.

8. DO NOT INSTALL NEAR ANY HEAT SOURCES

This Product should be situated away from heat sources such as radiators, stoves, or other products (including amplifiers) that produces heat.

9. DO NOT DEFEAT THE SAFETY PURPOSE OF THE POLARIZED OR GROUNDING-TYPE PLUG

A Polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prongs are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. PROTECT THE POWER CORD FROM BEING WALKED ON OR PINCHED PARTICULARLY AT PLUGS, CONVENIENCE RECEPTACLES, AND THE POINT WHERE THEY EXIT FROM THE APPARATUS.

11. ONLY USE ATTACHMENTS ACCESSORIES SPECIFIED BY THE MANUFACTURER.

12. USE ONLY WITH CART, STAND, TRIPOD, BRACKET, OR TABLE SPECIFIED BY THE MANUFACTURER, OR SOLD WITH THE APPARATUS. WHEN A CART IS USED, USE CAUTION WHEN MOVING THE CART/APPARATUS TO AVOID INJURY FROM TIP-OVER.

Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury to someone, and serious damage to the appliance. A unit and cart combination should be moved with care.

13. UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

For added protection for this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.

14. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANYWAY, SUCH AS WHEN THE POWER SUPPLY CORD OR PLUG IS DAMAGED, LIQUID HAS BEEN SPILLED OR OBJECTS HAVE FALLEN INTO THE APPARATUS, THE APPARATUS HAS BEEN EXPOSED TO RAIN OR MOISTURE, DOES NOT OPERATE NORMALLY, OR HAS BEEN FROPPED.

15. WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

16. APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SHALL BE PLACED ON THE APPARATUS.

3 ARRAY SERIES FEATURES

The Tecnare Array Series is a fully integrated line of self-powered DSP controlle loudspeakers that merge the singular advantages o array technology, with the application of computer digital management benefits to professional audio reinforcements. With this revolutionary technique the entire concept of an array box is completely replaced by the idea that each array element changes to be an active device, namely a PCC speaker, controlled with a small laptop via software. A standard PCC speaker houses one or more module amps and a DSP processor. All these PCC speakers are linked by a network through a USB interface to the laptop.

Once connected, we can control in real time the parameters of each speaker such as volume, graphic equalisation, parametric equalisation, parametric equalisation, crossover, internal delays, compressor-limiters, check test, save and recall of presets, mute, transfer spectrum analysis, real time analyzer, spectrum control, phase check, and more!

Array Series are designed for both permanent installation and touring applications where even coverage, intelligibility, and high SPL levels are required.

Array Series are engineered to offer sound reinforcement professionals solutions to meet almost any challenge.

Self-powered DSP controlled arrays ensure the consistency required to obtain the benefits of line array technology and provide the best flexibility, which is a very important factor when multiple zones within the array are required.

Array Series products also incorporate extra hardware for rigging and stacking as a standard.

Applications:

- Live Music
- Dance Clubs
- Theatre and corporate events.
- Houses of workship
- Touring

Main Characteristics:

- Built in proprietary hardware for simple, fast and safe rigging.
- Enclosures made with the latest techniques ensuring a perfect and rigid construction.
- Weatherized finish is provided, as the cabinet is coated with rugged Durawound texture finish and protected with specially treated grills.
- 16mm or 18mm birch plywood. Finished in blck semimatt textured Durawood weatherized coating. One recessed carrying handle.
- Powder coated perforated steel grid with acoustically transparent reticulated foam.
- Max SPL: Up to 136dB Continuous.
- Nominal dispersion up to 90ºH x 8ºV

4 SYSTEM'S FEATURES

LA 208

Frequency Response: 78Hz-18kHz ±4dB
Nominal Dispersion: 85ºH x 10ºV @ -6dB
Impedance: 8 Ohm
Sensitivity: 99dB (1w/1m)
Calculated max SPL: 129dB Continuous
Power Handling: 480W nominal
900W continuous
Dimensions(HxWxD): 610x458x262mm
Net weight: 28.6kg selfpowered Pcc version.
Components: 2x8" LF driver, 1x1.4"HF exit compression driver

LA 122

Frequency Response: 69Hz-18kHz ±4dB
Nominal Dispersion: 85ºH x 8ºV @ -6dB
Impedance: 8 Ohm
Sensitivity: 100dB (1w/1m)
Calculated max SPL: 128dB Continuous
Power Handling: 600W nominal
1100W continuous
Dimensions(HxWxD): 410x600x430mm
Net weight: 40kg selfpowered Pcc version.
Components: 1x12" LF driver, 2x15"HF driver on a proprietary waveguide device.

LA 312

Frequency Response:
58Hz-19kHz ±4dB
42Hz-19kHz ±4dB (6 elements)
Nominal Dispersion: 90ºH x 8ºV @ -6dB
Impedance: 4 Ohm low, 8 Ohm mid, 8 Ohm high.
Sensitivity: 105dB (1w/1m)
Calculated max SPL: 136dB Continuous
Power Handling: 1500W nominal
2400W continuous
Dimensions(HxWxD): 410 (front H)x310 (rear hetight)x1245 (width) x 740 (depth)mm
Net weight: 86 kg selfpowered Pcc version.
Components:
Low:2x12"LF driver band pass horn loaded
Mid: 1x12"HF passed corrected
High: 2x1.5" compression driver attached to a proprietary waveguide device.

MINIARRAY

Frequency Response: 85Hz-18kHz ±4dB
Nominal Dispersion: 85ºH x 8ºV @ -6dB
Impedance: 8 Ohm
Sensitivity: 96dB (1w/1m)
Calculated max SPL: 120dB Continuous
Power Handling: 250W nominal
480W continuous
Dimensions(HxWxD): 232x543x462mm
Net weight: 27kg selfpowered Pcc version.
Components: 2x6 1/2" LF driver, 1x15"HF driver on a proprietary waveguide device.

AMS 12

Frequency Response: 48Hz-19kHz ±4dB
Nominal Dispersion: 90ºH x 30ºV @ -6dB
Impedance: 8 Ohm
Sensitivity: 103dB (1w/1m)
Calculated max SPL: 132dB Continuous
Power Handling: 580W nominal
Dimensions(HxWxD): 705x395x420mm
Net weight: 30kg selfpowered Pcc version.

Components: 1x12" LF driver, 1x1.4"HF driver on a rotary constant Q horn

AMS 15

Frequency Response: 42Hz-18kHz ±4dB
Nominal Dispersion: 90ºH x 40ºV @ -6dB
Impedance: 8 Ohm
Sensitivity: 106dB (1w/1m)
Calculated max SPL: 135dB Continuous
Power Handling: 680W nominal
Dimensions(HxWxD): 890x520x550mm
Net weight: 39kg selfpowered Pcc version.
Components: 1x15" LF driver, 1x1.4"HF driver on a rotary CD horn

SW118M

Frequency Response: 35Hz-400Hz ±4dB
Impedance: 8 Ohm
Sensitivity: 98dB (1w/1m)
Calculated max SPL: 128dB Continuous
Power Handling: 1000W nominal
2000W continuous
Dimensions(HxWxD): 556x569x691mm
Net weight: 54kg selfpowered Pcc version.
Components: 1x18" LF driver.

SW218V

Frequency Response: 38Hz-280Hz ±4dB
Impedance: 4 Ohm
Sensitivity: 103dB (1w/1m)
Calculated max SPL: 138dB Continuous
Power Handling: 2000W nominal
4000W continuous
Dimensions(HxWxD): 1080x580x830mm
Net weight: 85Kg selfpowered Pcc version.
Components: 2x18" LF driver.

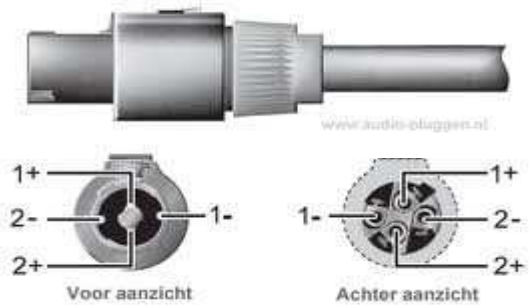
5 GENERAL SETUP INSTRUCTIONS

5.1 Passive Box

5.1.1 Speaker connection

Array series are connected with Speakon NL4 plugs except the LA312 unit, which is connected with Speakon NL8.
Connectors are wired as follows:

Speakon Connector	LA312	LA122 MiniArray	SW118M SW218M
1(+)	LF (+)	LF (+)	LF (+)
1(-)	LF(-)	LF(-)	LF(-)
2(+)	MF(+)	HF(+)	
2(-)	MF(-)	HF(-)	
3(+)	HF(+)		
3(-)	HF(-)		



The two socket speakon pins in the box are connected in parallel within the enclosure, so either connector can be used to connect an amplifier or to link to an additional Array series or Tenare unit.

In an exceptional way, AMS 12 and AMS 15 can also work in a full range mode by shortcutting the 1+ and 2+ pins and 1- and 1- pins of the NL4 input speakon connector.

Tecnare recommends a maximum length cable according to the section cable used.

	Section [mm²]		
Impedance	**1.5**	**2.5**	**2.5**
2	3	5	8
3	4.5	7.5	12
4	6	10	16
6	9	15	24
8	12	20	32
12	18	30	48
16	24	40	64

5.1.2 Amplifier selection

Tecnare recommends amplifiers in agreement with the table below:

Unit	Conf.
2xSW118M	1xMA2400
8xLA312 + 6xSW218M	8xMCH4700
8xLA122 + 4xSW118	4xMCH4700
12xLA122 + 8xSW118	4xMCH4700
12xMiniArray + 4xSW118	2xMCH4700

5.1.3 Array Series and DPA-28X

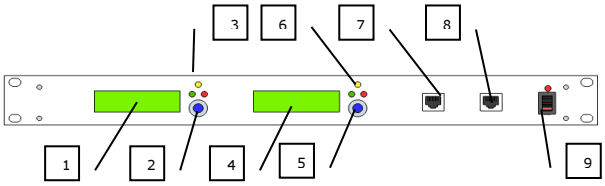
The DPA 28X is a complete 2 input - 8 output digital loudspeaker management system designed for the touring or fixed sound installation markets. The absolute latest in available technology is utilized with 64-bit floating point processors and high performance 24-bit Analogue Converters. The high-bit DSP prevents noise and distortion induced by truncation errors of the commonly used 24-bit fixed-point devices. A complete set of parameters include I/O levels, delay, polarity, 8 bands of parametric EQ per channel, multiple crossover selections, compressor, Limiter, USB and Ethernet port connection. Precise frequency control is achieved with its 1 Hz resolution.

The DPA - 28X can be controlled or configured in real time on the front panel using the previously stored presets or with the intuitive PC software via the USB or Ethernet interface. The Ethernet port allows controlling the device from a long distance using just an Internet connection.

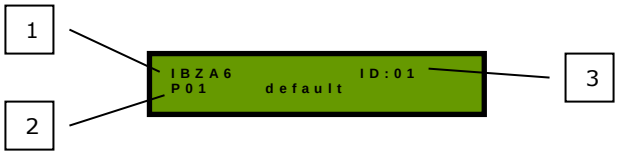
5.1.3.1 FEATURES

- 2 Input and 8 Outputs.
- 64 Bits floating point DSP
- High performance 24-bit A/D Converters
- 1 Hz Frequency Resolution
- Storage of up to 10 program setups
- Unlimited number of presets via software
- Uploading of 10 collection presets in one step via software
- USB port connection.
- Ethernet port connection
- 30 bands Input graphic equalizer.
- 8 bands Output Parametric equalizer per output channel
- 4 ways configurable Crossover
- Main Delay
- Input and output Compressor and Limiter
- Configurable Clock
- Noise Generator
- Sound Analyzer
- Phase inverter per band
- Mute
- Via adjustable delay

5.1.3.2 FRONT PANEL FUNCTIONS



1.-LCD Screen CH-A: Show all the necessary information to control de unit



1.- Unit name

2.-Shows the preset number and identification.

3.- ID of the Unit.

2.- Rotary thumb wheel CH-A: Controls the presets. To select the desire preset, press the wheel.

3.- On / SIGNAL / CLIP led CH-A: When On indicate the unit is On, Signal at the input and the input level is above the device's maximum headroom respectively.

4.- LCD Screen CH-A: Show all the necessary information to control de unit

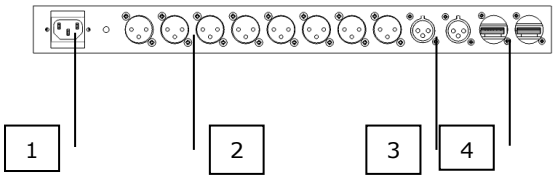
5.- Rotary thumb wheel CH-A: Allows you to switch between presets. To select the desire preset, press the wheel.

6.- On / SIGNAL / CLIP led CH-A: When On indicates the unit is On, Signal at the input and the input level is above the device's maximum headroom respectively.

7, 8.- Ethernet connector: Standard RJ-45 female socket.

9.- Power switch: Controls power On/Off.

5.1.3.3 REAR PANEL FUNCTIONS



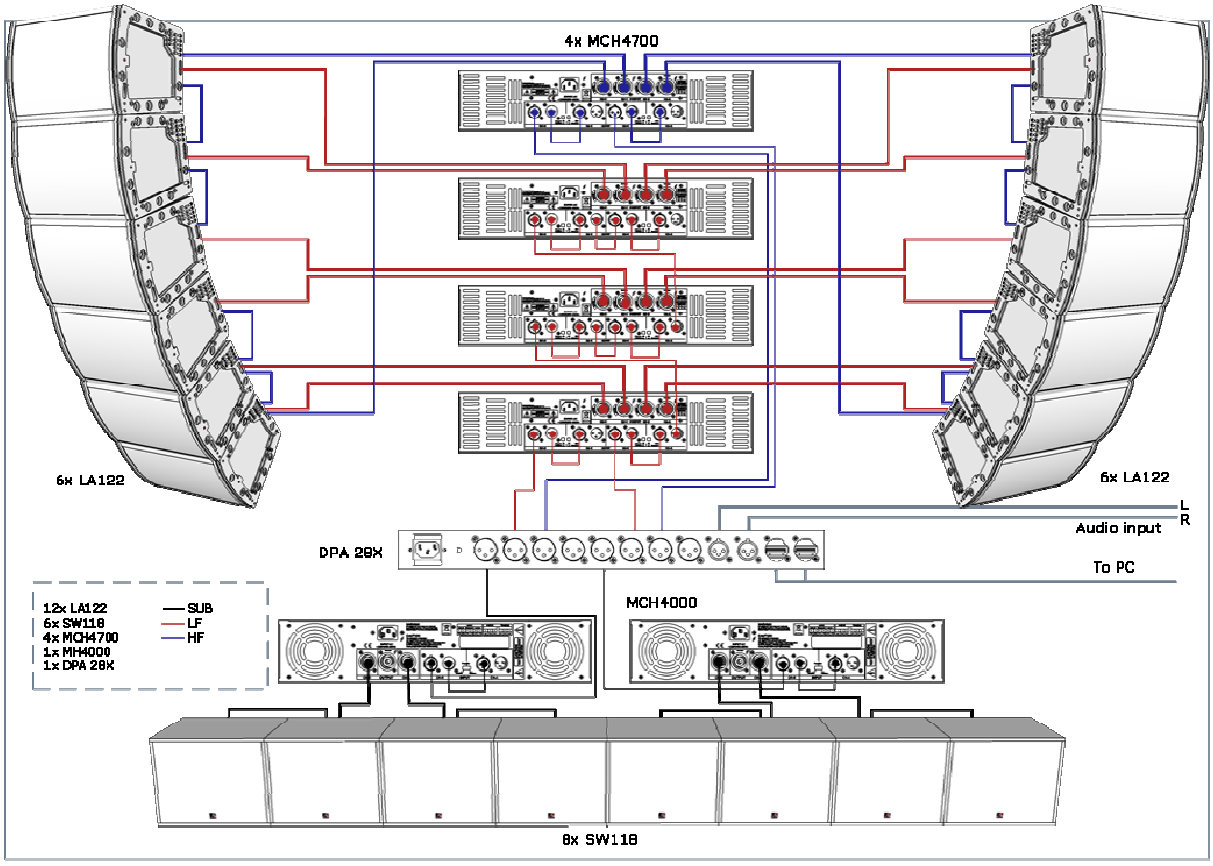
1.- Main Power: Connects via a standard IEC socket. A compatible power cord is supplied with the unit. The voltage input is either 115VAC or 230VAC and is clearly specified on the unit. Voltage requirement has to be stated upon ordering.

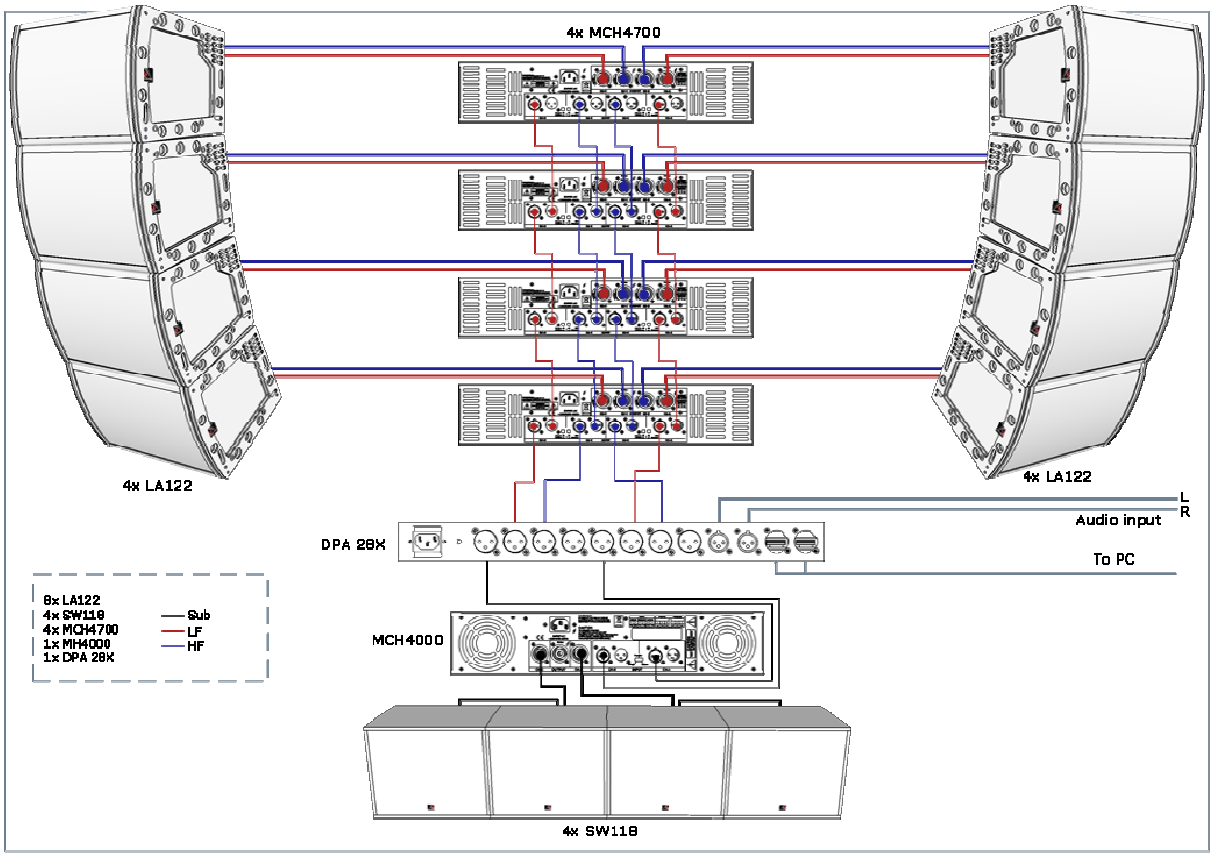
2, 3.- XLR input and outputs: Separate 3-pin XLR connectors are provided for each audio input and output. The device's output stage employs the balanced impedance topology. All I/O connectors have pin 1 as ground (shield), pin 2 as + and pin 3 as –

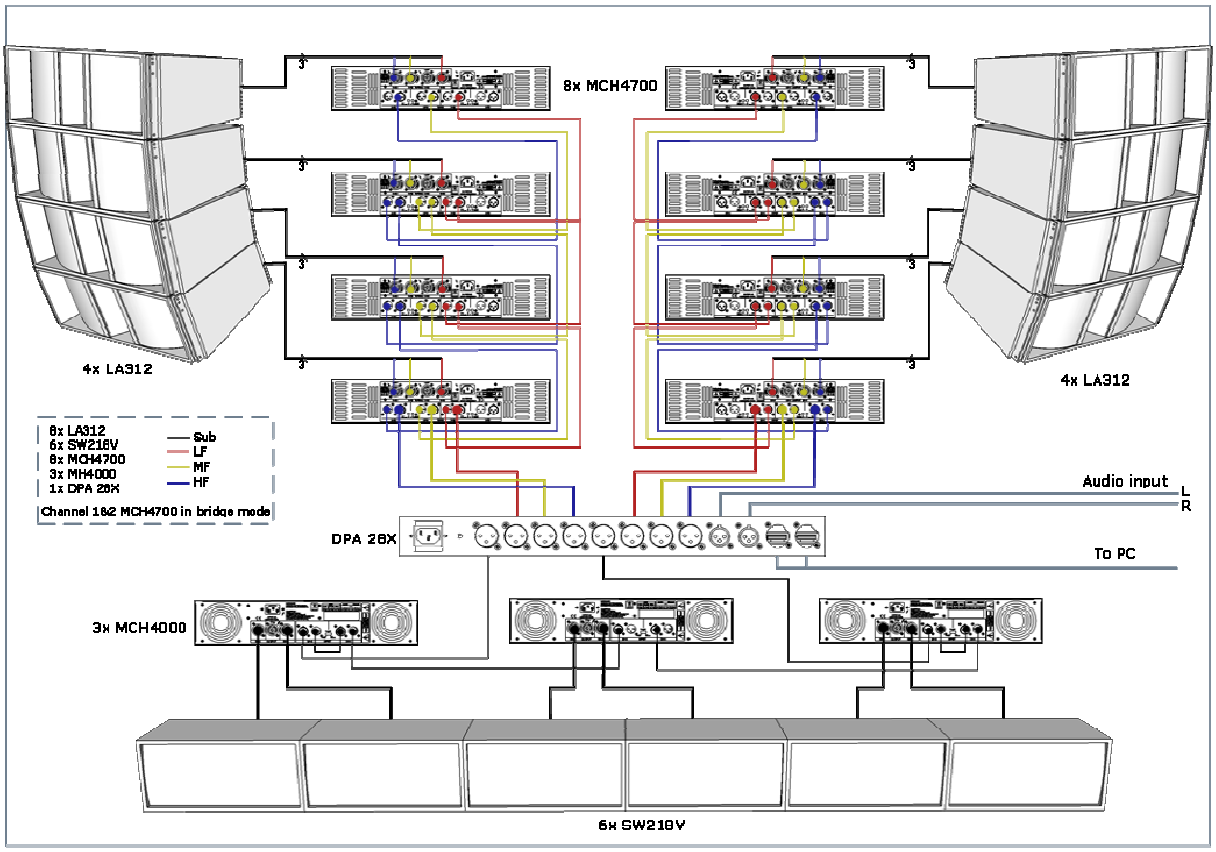
4.- USB connectos: USB connector per channel for PC connection.

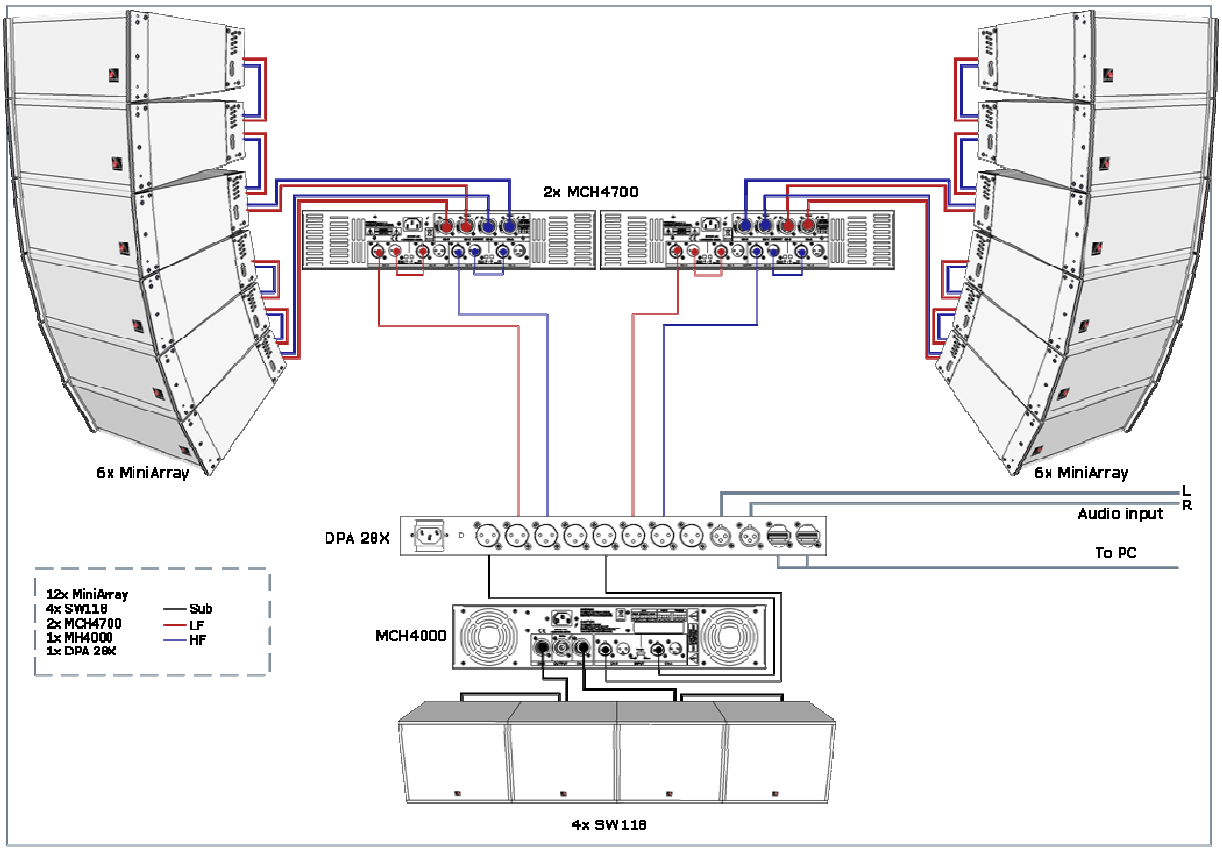
Note: Please refer to section for further information.

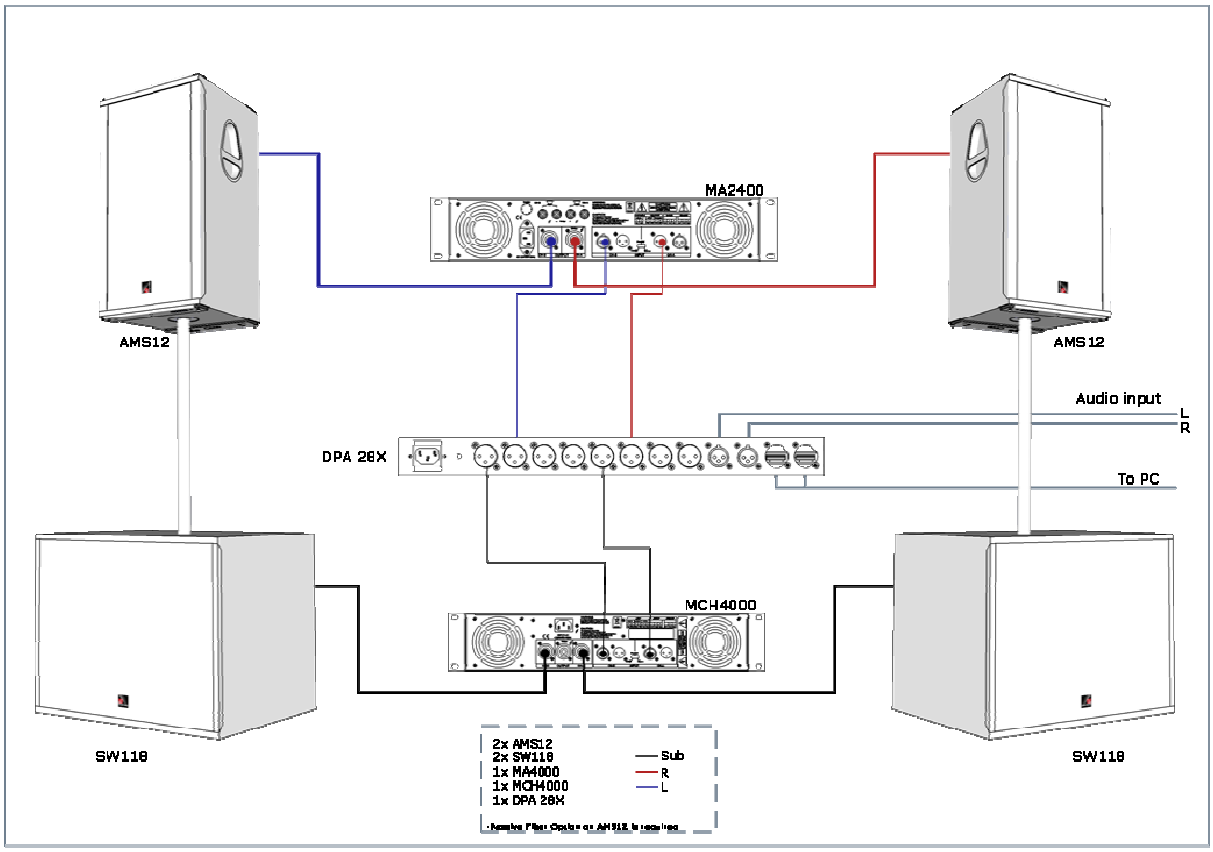
5.1.4 Array Series Recommended configurations.

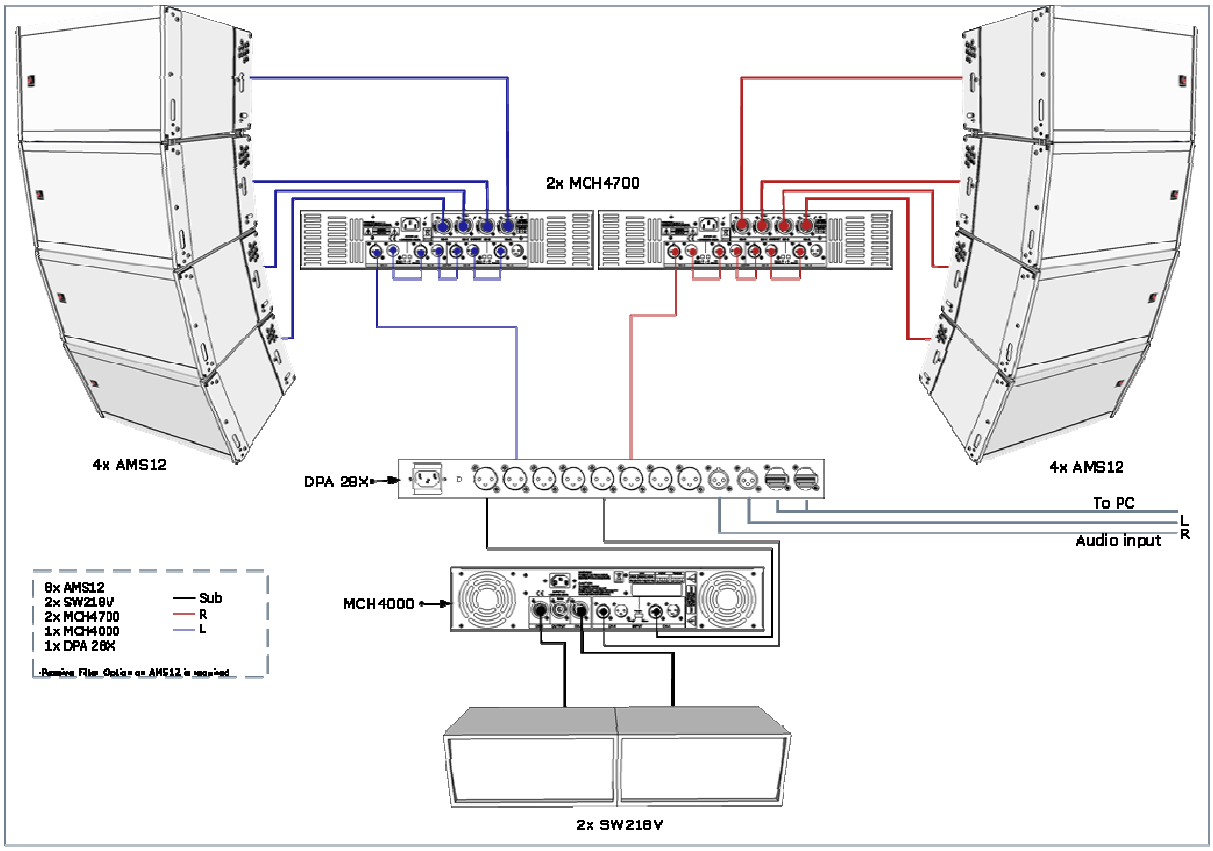


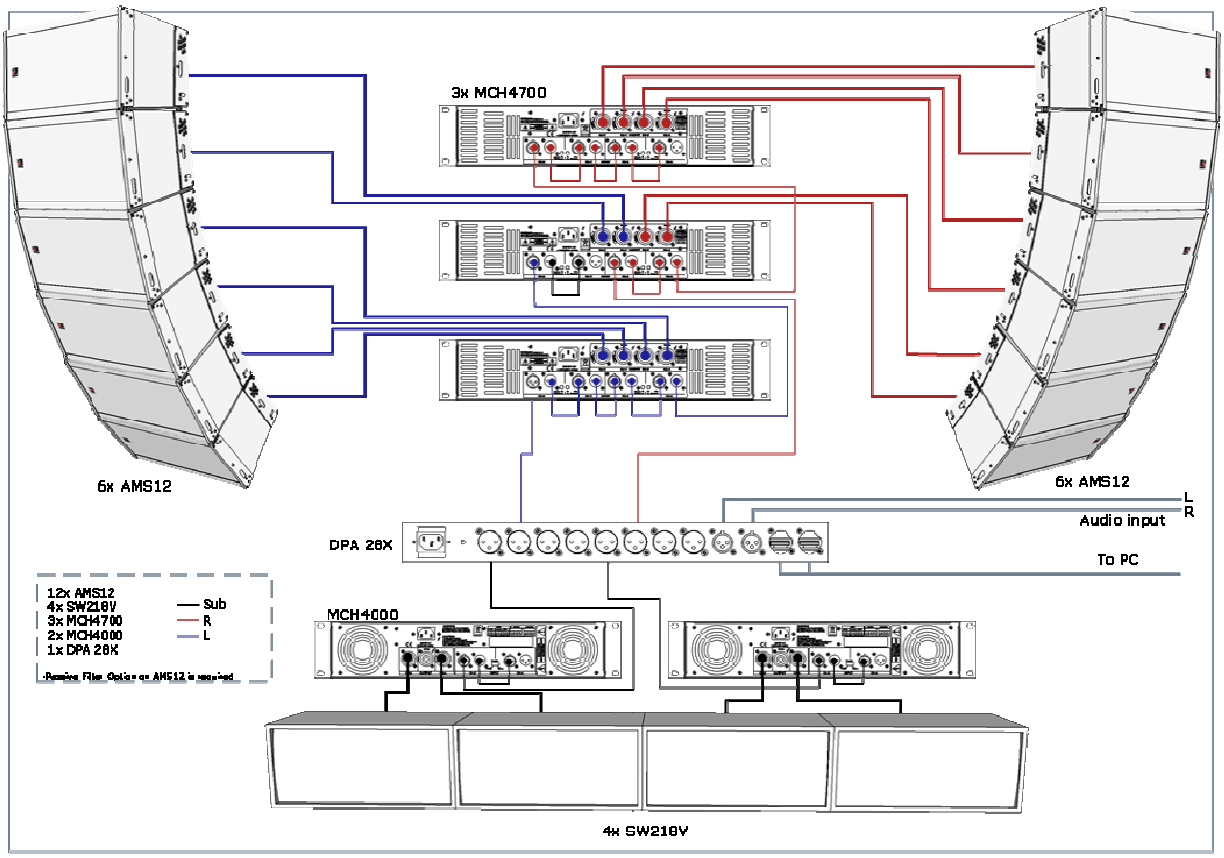


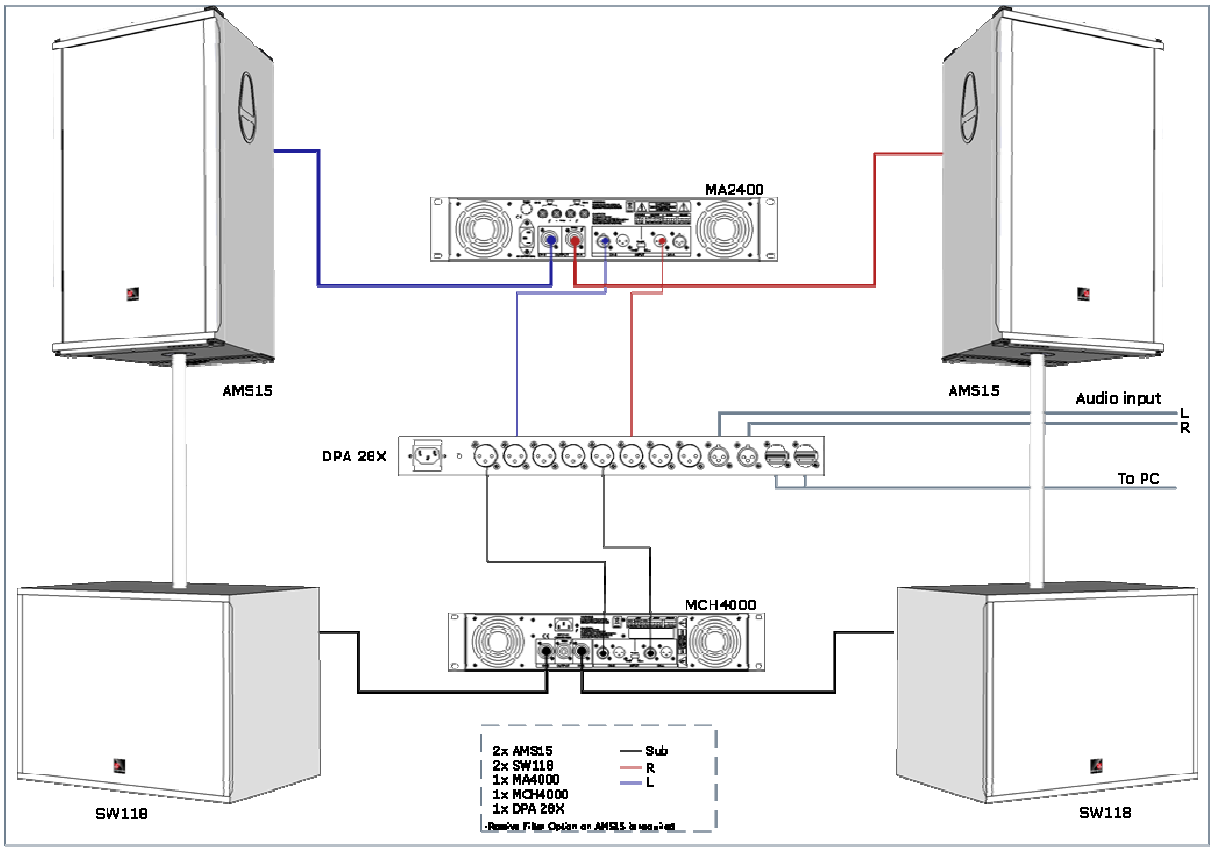

8x MCH4700
4x LA312
4x LA312
6x LA312
6x SW218V
8x MCH4700
3x MH4000
1x DPA 28X
Channel 1&2 MCH4700 in bridge mode
Sub
LF
MF
HF
Audio input
L
R
DPA 28X
To PC
3x MCH4000
6x SW218V

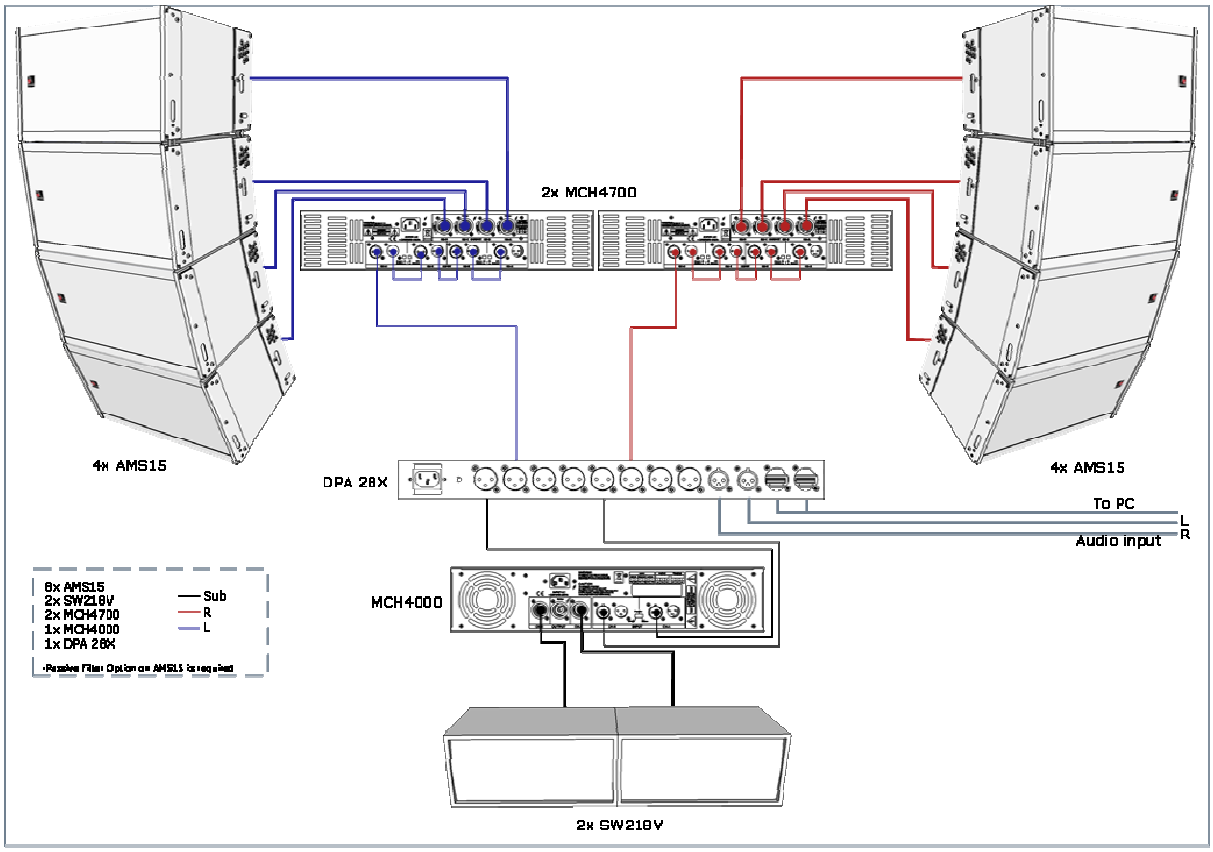

2x MCH4700
6x MiniArray
6x MiniArray
Audio input
L
R
DPA 28X
To PC
12x MiniArray
4x SW118
2x MCH4700
1x MH4000
1x DPA 28X
Sub
LF
HF
MCH4000
4x SW118

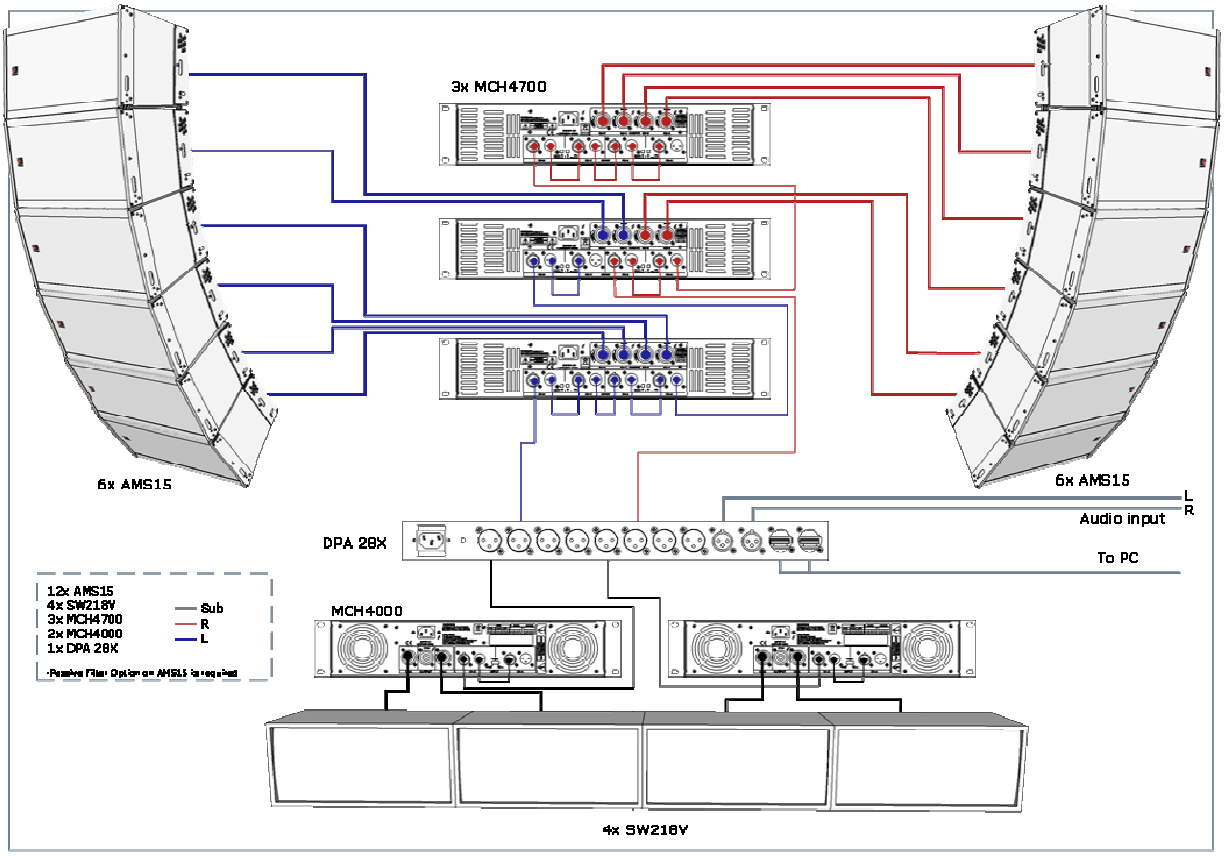

MA2400
AMS12
AMS12
Audio input
L
R
DPA 28X
To PC
MCH4000
SW118
SW118
2x AMS12
2x SW118
1x MA4000
1x MCH4000
1x DPA 28X
Sub
R
L

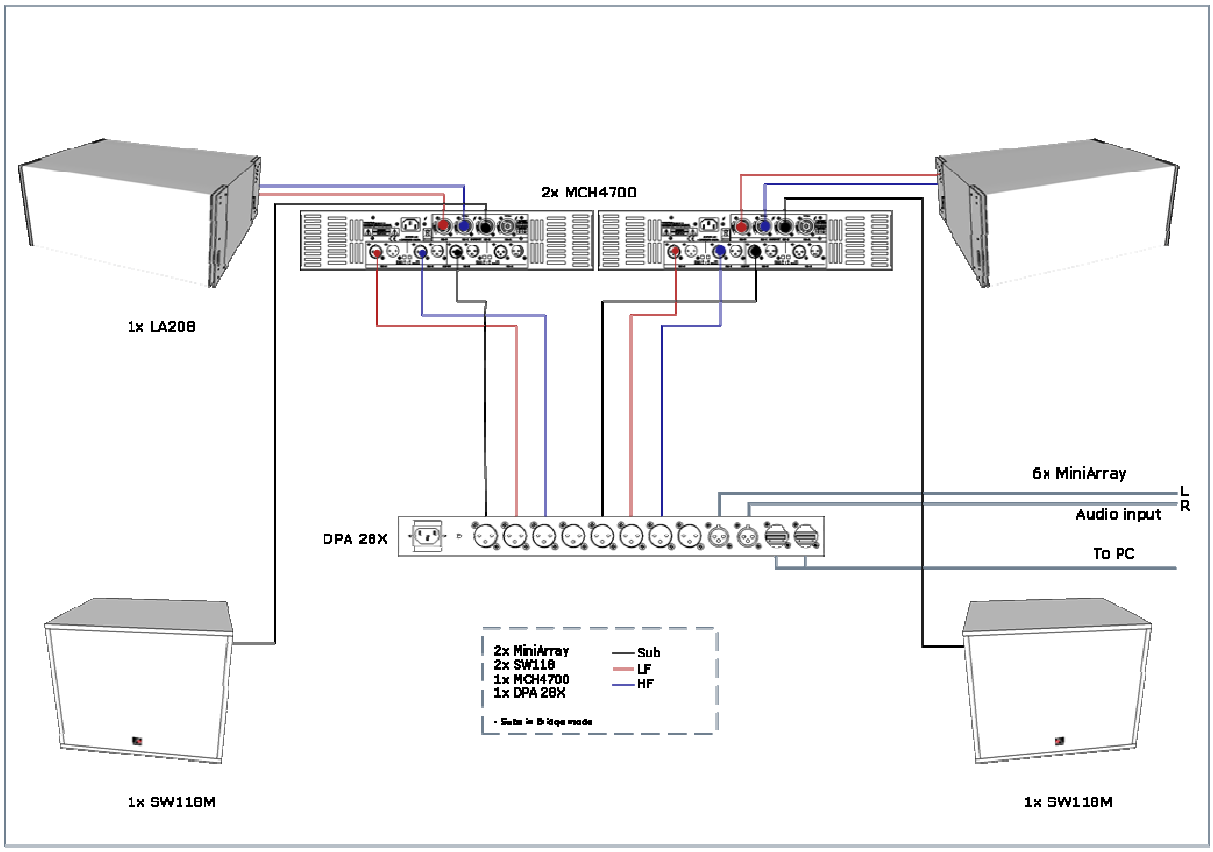

2x MCH4700
4x AMS12
4x AMS12
DPA 28X
To PC
L
R
Audio input
8x AMS12
2x SW218V
2x MCH4700
1x MCH4000
1x DPA 28X
Sub
R
L
MCH4000
2x SW218V

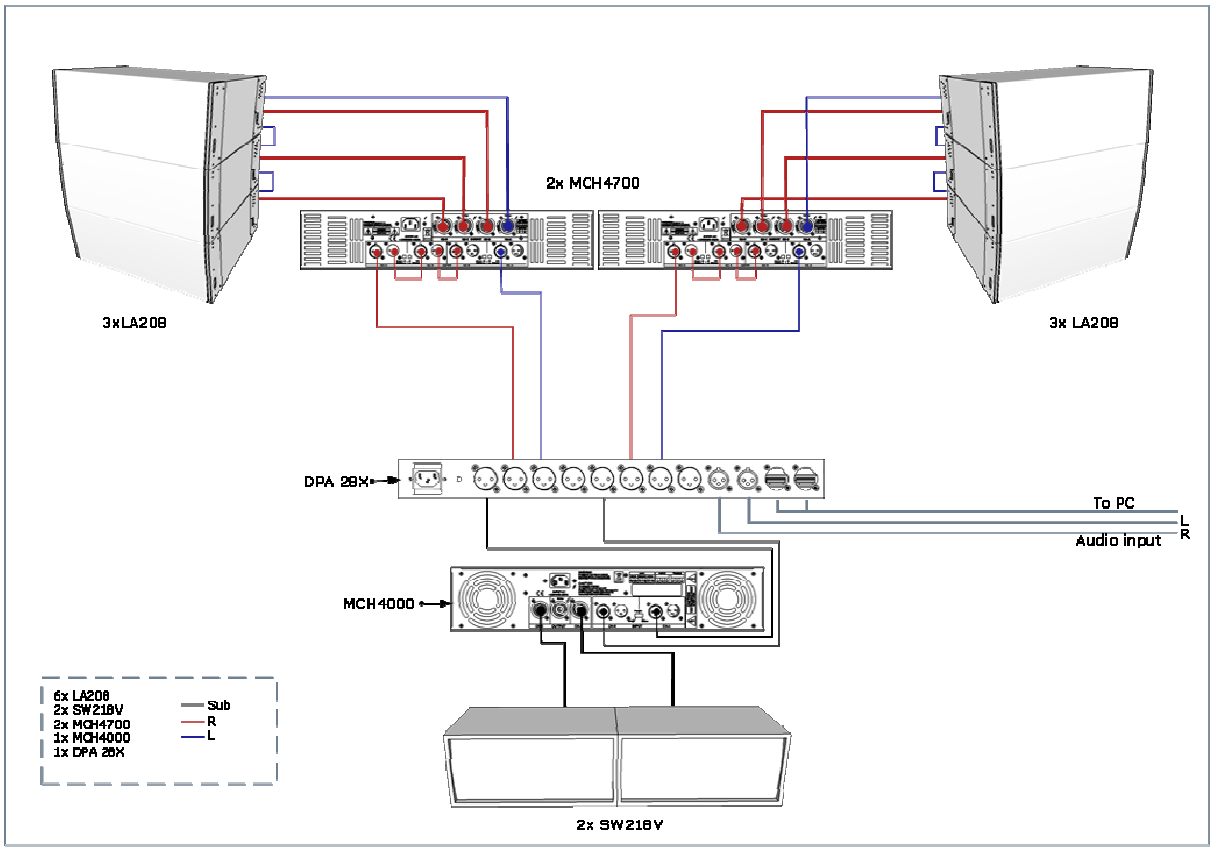

3x MCH4700
6x AMS12
6x AMS12
DPA 28X
Audio input
L
R
To PC
MCH4000
4x SW218V
12x AMS12
4x SW218V
3x MCH4700
2x MCH4000
1x DPA 28X
Sub
R
L


MA2400
AMS15
AMS15
Audio input
L
R
DPA 28X
To PC
MCH4000
SW118
SW118
2x AMS15
2x SW118
1x MA4000
1x MCH4000
1x DPA 28X
Sub
R
L


2x MCH4700
4x AMS15
4x AMS15
DPA 28X
To PC
L
R
Audio input
MCH4000
8x AMS15
2x SW218V
2x MCH4700
1x MCH4000
1x DPA 28X
Sub
R
L
2x SW218V


3x MCH4700
6x AMS15
6x AMS15
L
R
Audio input
To PC
DPA 28X
MCH4000
12x AMS15
4x SW218V
3x MCH4700
2x MCH4000
1x DPA 28X
Sub
R
L
4x SW218V


2x MCH4700
1x LA208
6x MiniArray
L
R
Audio input
To PC
DPA 28X
2x MiniArray
2x SW118
1x MCH4700
1x DPA 28X
Sub
LF
HF
1x SW118M
1x SW118M

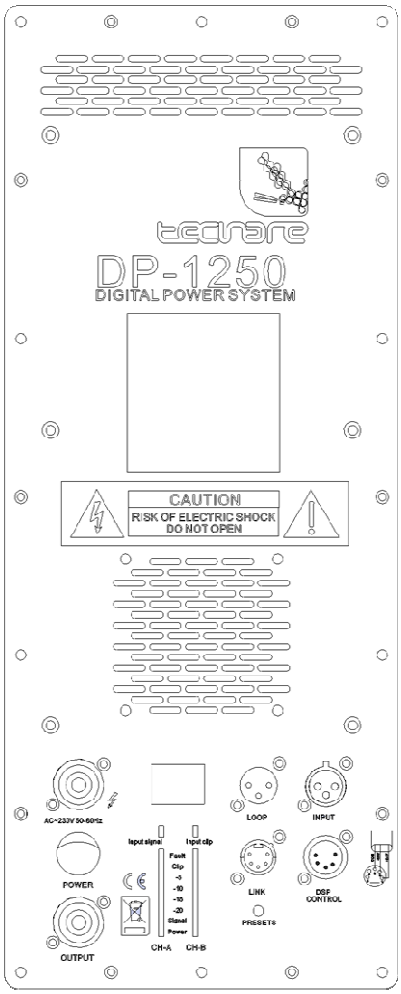

2x MCH4700
3xLA208
3x LA208
DPA 28X
To PC
L
R
Audio input
MCH4000
6x LA208
2x SW218V
2x MCH4700
1x MCH4000
1x DPA 28X
Sub
R
L
2x SW218V

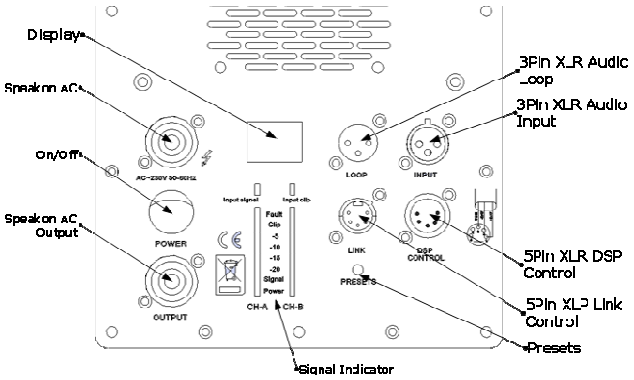
5.2 PCC ORIGINAL SERIES

5.2.1 Main Features

- Input graphic eq.
- Input parametric eq (10 bands).
- 4 band crossover.
- Gain control.
- Mute control.
- Check test.
- Buit in Analyzer (impulse, transfer, rta, etc..).
- Real time control.
- Presets storage in the PC.
- Grouping.
- Acoustic center control, between bands.
- Compressor / Limiter in each band.

Original Series





5.2.2 Pcc Original Series Software User's Manual

5.2.2.1 INSTALLATION

1.- Click on Setup.exe icon

2.- Follow the wizard instruction (for default installation you can press NEXT until the end)

* The estimated time required for first installation is about 1 minute.

* If asked by the wizard, restart the computer

3.- Connect the unit to the PC using the provided USB cable.

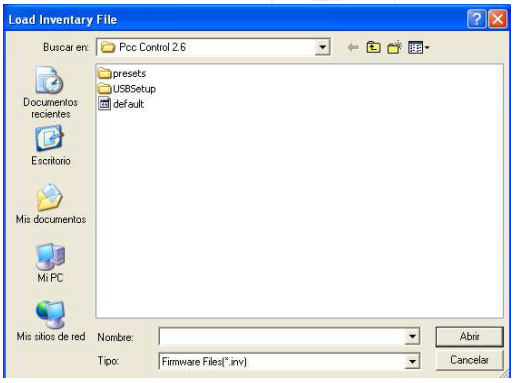
4.- Copy serfile.ccc and default.inv files from the installation CD to c: \program files \PCCcontrol \usbsetup.

NOTE: DIRECTORY ROOT CAN VARY DEPENDING ON THE CONFIGURATION OF THE COMPUTER OF THE USER CASE.

5.2.2.2 Using the PCC Controller Original Series.

STARTING COMMUNICATION.

Click on the PCC icon

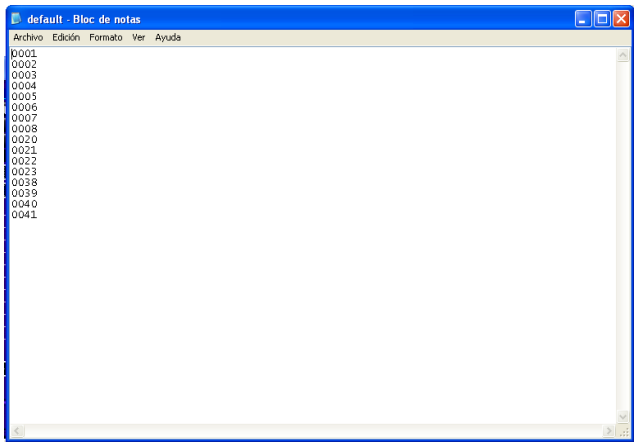


In the previous window, please select the inventory file.

In order to modify the inventory file according with the user configuration, please edit the mentioned file using a text editor.

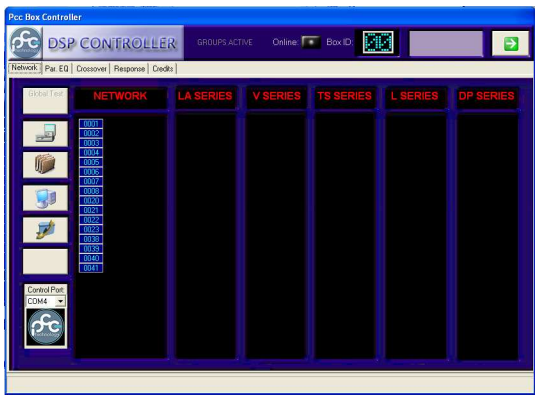
EDITING INVENTARY FILE.

Once in the text editor, add and/or erase the serial numbers according with the following instructions:

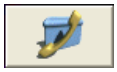


- The serial numbers must always have four digits.
- No spaces between numbers, not even at the end of the list is required.

Once selected the inventory file, the software begins, by defect, in the Network screen:



The serial numbers of the boxes listed in the inventory file will appear in the left column of the screen.

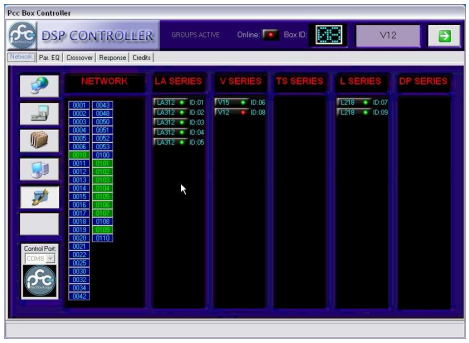
Open the communication port by clicking the next button: 

Once opened, it will appear a magnifying glass icon.

Pressing this icon, the system will start a communication test. Please check all the boxes connected to the computer are responding correctly by checking either the alternative numbers shown in the back part of each unit or the front red light flashes.

Click on "OK. All the devices are responding"

At this point the following window will appear, where you can find all the boxes connected to the network by series.

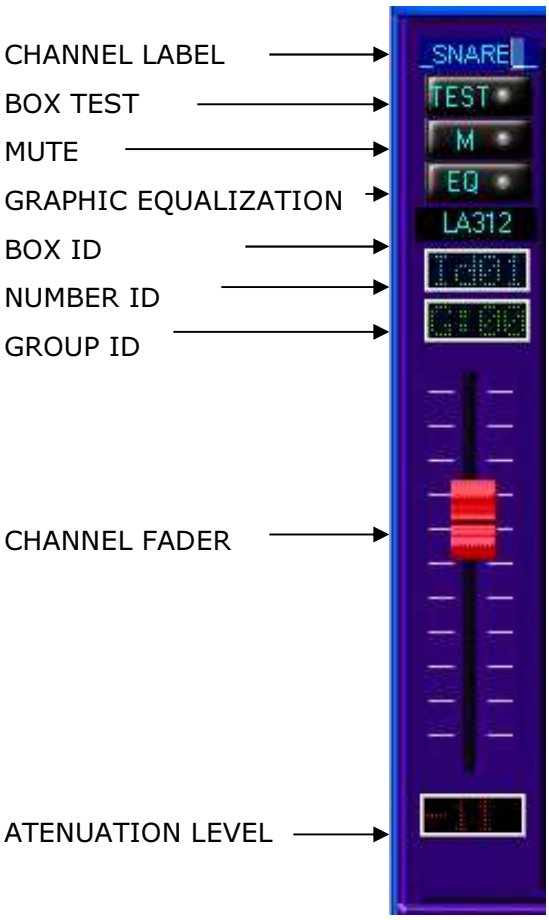


MIXER SCREEN.

By pressing F2 key you will open the mixer screen where you can find as many faders in yellow colour as boxes connected to the network.

When a box is selected, the fader will turn from yellow to red.

EDITING CHANEL PARAMETERS.



- **Channel label**: It allows assigning a name to each box.
- **Test:** When pressing it will emmit a signal composed by a pink noise to each one of the crossover bands of the box.

The purpose of this test, is to verify that all the components are in good condition.

Mute: It silences the box.

Graphical Equalization: It is acceded to the graphical equalizer of 30 bands of the box. (See graphical EQ)

Box ID: It shows the Box ID. This value can´t be modified by the user.

Number ID: It is a consecutive number assigned to each box according to the order of the boxes in the inventory file.

Group ID: With the purpose of being able to process a set of boxes at the same time, exists the possibility of grouping the channels of the mixer.

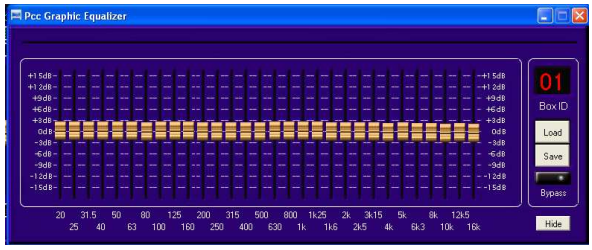
In order to assign a number of group, right click on group ID, assigning the same number to all boxes that will form this group. You can switch on and off this feature by clicking "Groups Active" in the right inferior parto of the screen.

Once activated, all the boxes in the same group will vary their parameters when varying anyone of the parameters of one of the boxes of the group.

Have in mind that the system will assign the same configuration that has the box located to the vary left of the boxes, saving this configuration in the memory of the box.

Box Fader: It will attenuate or enhancement the level of the box.

GRAPHIC EQUALIZER.

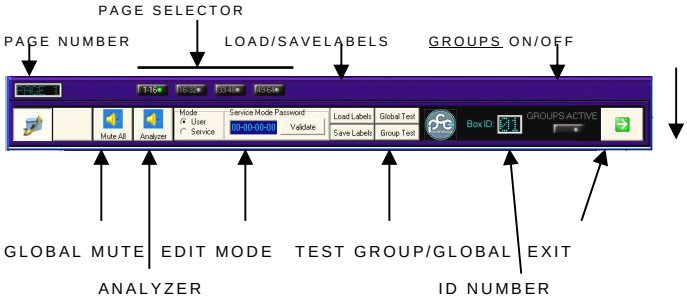


The graphical equalizer has the following technical characteristics per box:

- 30 bands of 1/3 of octave from 20Hz to 16kHz
- Enhancement/ Attenuation of +15dB/ -15dB
- Function to keep and to load different equalizations
- Bypass

The box ID information shows the identification number of the box.

MIXER GLOBAL FUNCTION



Page Number: With PCC Technology software it is possible to make the control of up to 64 boxes. In order to have an operational control, these 64 boxes are in four pages of 12 channels each. This parameter indicates the number of page.

Page selector: Changes the showed page.

Load / Save labels: In order to make agile the process of identification of boxes, it is possible to save the labels of all the channels later to be loaded in another session.

Groups on/off: It switches on/off the global function group.

Global Mute: It silences all the connected boxes to the network.

Analyzer: with the activation of this button, one will enter the analyzer window. AUDIO ANALYZER.

Edit mode: In User mode it is possible to make modifications in all the parameters of the box except in cut-off frequency of the crossover filters, and the delay of each band. In Service mode the user is allowed to accede to the expert service, an access key is due to introduce, to select "service" and to press "Validate".

Group / Global Test: it tests that the communication is working properly.

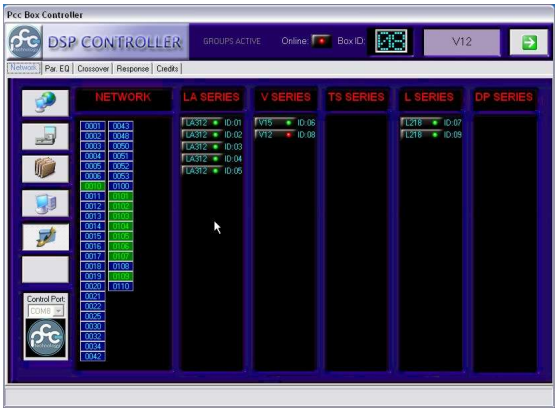
ID Number: It visualizes the number of identification of the active box (fader in red)

Exit: Exit the software

NETWORK SCREEN.

At the screen Network, the different boxes are located in columns according to the series to which they belong. The serial numbers that appear in the column Network are the contained in the inventory file, being in green colour those that really are connected to the network and those that they remain in blue correspond with the numbers that the system has not detected. Let us remember that the inventory file can contain serial numbers that really do not exist in the work network.

Like in the mixer screen the box that is selected is noticeable with a point of red colour.



In the left part of the screen are all the functions that can be used:

It sends a flag test to all the boxes, to verify that communication is being done properly.

It saves the data of configuration of the active box (red) to a file. When making this action is necessary to consider that this configuration is stored automatically in the box, in such a way that when returning to switch on it will do it with this configuration.

It loads a configuration file to the selected box. As in the previous case the box stores in its memory this configuration.

It updates the present configuration in the internal memory of the box, in such a way that it is stored in its non-volatile memory.

NOTE: THE REMAINING ICONS HAVE BEEN EXPLAINED IN THE SECTION BEGINNING THE COMMUNICATION

PARAMETRIC EQUALIZER.

In order to accede to the parametric equalizer, select "Par. EQ " at the window" Pcc Box Controller ".

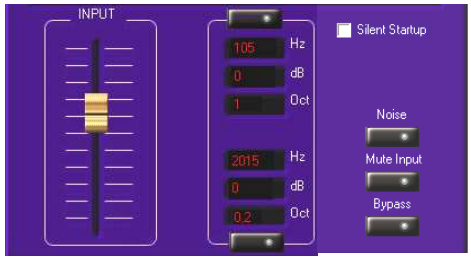
It is necessary to consider that each one of the boxes has it's own parametric equalizer, reason why it is necessary to assure that the box to which is wanted to apply a parametric equalization is selected (in red).

Technical characteristics:

- 10 parametric Bands.
- Selector of frequency from 20Hz to 20kHz.
- Enhancement/Attenuation of +15dB/ -15dB by band.
- Factor of quality, Q: Expressed in octaves, from 0.1 to 1 octave.
- Silence (Mute)
- Activation/ Deactivation of equalization (Bypass)
- Generating of pink noise.

Way of operation:

The graph that appears contains two lines. The red one corresponds to the activated band, and the green line corresponds with the sum of the 10 bands of the equalizer (global equalization).



The model and number of the box being equalizer appears in the right superior part of the window.

In order to equalize, select the desired band by clicking the band selector. The central frequency of the band can be entered in written to modify or also you can drag with the mouse in the graph the curve of red colour.

Like with the frequency, the enhancement or wished attenuation can be written or can be modified in the graph with the mouse. In order to select the bandwidth to work, press with the right button of the mouse in window "Q" and select the desired Q.

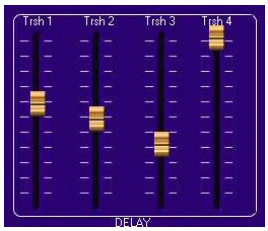
CROSSOVER.

As commented in section 2,2 (GLOBAL FUNCTIONS Of the MIXER) to be able to modify the parameters of this window it is necessary to enter mode service introducing the user key.

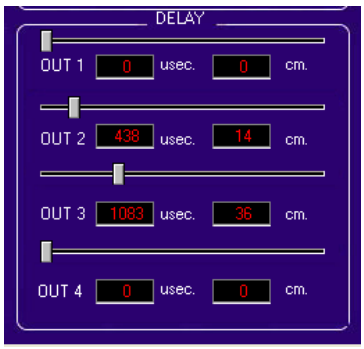
This window consists of four filters crossover, a compressor/ limiter and an adjustable delay in time or distance by band.

Technical Characteristics:

- Adjustable superior and inferior Cut-off frequencies in all the rank of frequency by band. The slope is of 24 dB/octave in Linkwitz-Riley way.
- Variable Control of adjustable gain from -24dB to +5dB with the fader of the mouse in the screen response.
- Limiter by band with threshold control, time of attack and release. The threshold can be modified entering the values manually or moving the faders at the right of the window. The limiter has in addition a phase reverse and mute facilities per band.

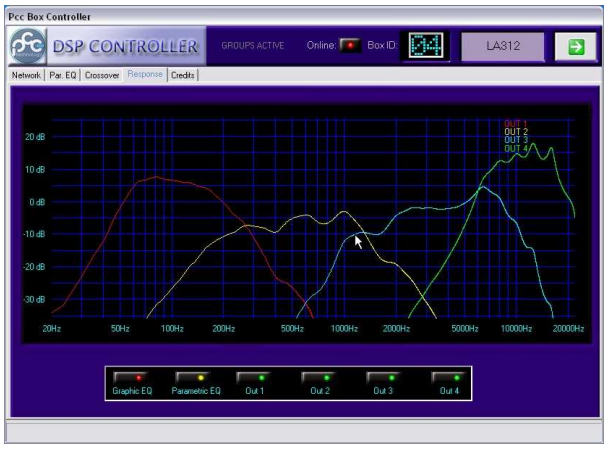


- Adjustable delay by band from 0 to 4ms to fit the acoustic centers of the different elements from the box.



RESPONSE.

With this screen, all the processing made in the box referring to graphical equalization can be visualized in simultaneous way with parametric equalization and crossover.

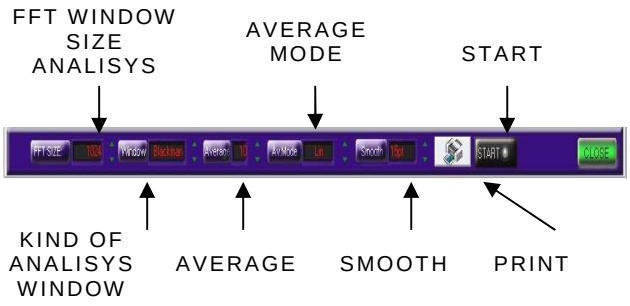


By clicking the buttons located in the inferior part of the screen, it is possible to hide and show the different crossover bands as well as the different equalization made.

AUDIO ANALYZER.

The system introduces a powerful audio analyzer, to which it is acceded by clicking the analyzing key of the audio mixer. With this tool, the sound engineer can make the following analyses: impulse response, transference function, spectrum analyzer, phase response and can even obtain the polar plot of the box.

This screen contains several folders in the superior part with the purpose of being able to visualize all the possible analyses in separated windows. All these windows have a common zone of configuration of analysis located in the inferior part of the screen.



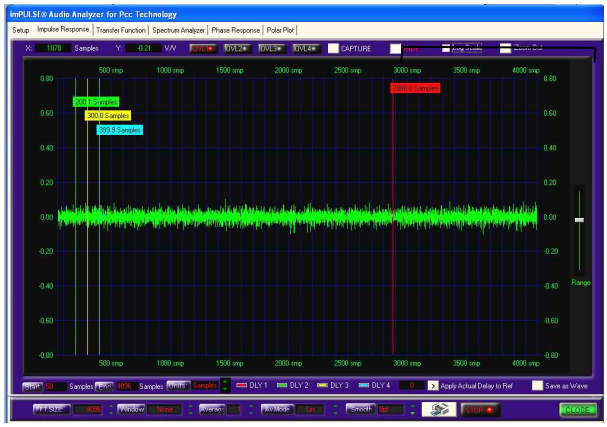
SETUP SCREEN.

The measurer VU is activated by pressing the icon VU: It allows simultaneously to visualize the signal of reference and the input signal .

In the right superior part is the generator of signals, in which it is possible to select the type of signal (sinusoidal, square, pink noise, white noise, etc.), frequency of the signal, time of the pulse, interval of the pulse and level of output.

This screen also have adjustment of delay of the different bands which can be obtained with the impulse response.

IMPULSE RESPONSE.



With this screen the answer of the impulse of a certain room can be obtained.

Also the existing delay between the different speakers of the box can be obtained.
In order to make this process the system enables markers with the purpose of being able to visualize in a fast and effective way the existing delay between the emission of the impulse and the reception of the same one by an error microphone. In this way it is possible to obtain the retardations relative to each band.

TRANSFER FUNCTION.

With the use of this screen, the system calculates the transfer function of the system, that is to say, the difference between the signal from the input of the box to the taking of the acoustic signal by a measurement microphone.

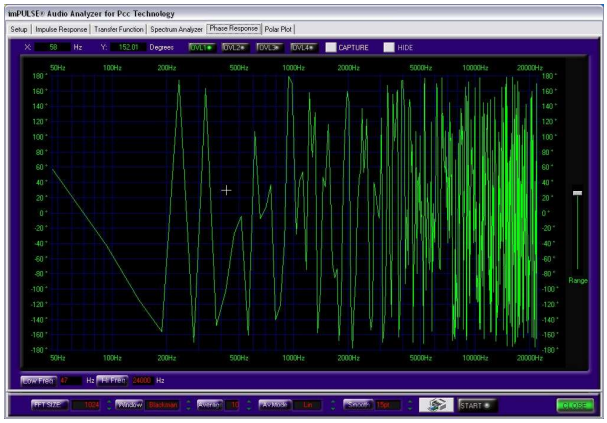
A very important function that contains this screen is the possibility of visualizing and modifying in real time, using the mouse, the graphical equalizer (represented in the figure by white triangles) of any of the boxes whose graphic eq has been selected at the mixer screen. The yellow line corresponds to the processing curve made to the box selected at the network or mixer screen, whereas the green line shows the function of transference of the box.

REAL TIME SPECTRUM ANALYZER RTA.

The system allows in addition to make analysis in frequency with a Real Time Analyzer. It is possible in addition simultaneously to visualize the spectral analysis of the signal of reference and the signal of entrance (microphone).

In the inferior part of screen, are different functions as adjustment from inferior and superior frequency, capture curve snapshot (show peak), erase of captured curve (reset peak) and show/hide of the signals reference and input independently.

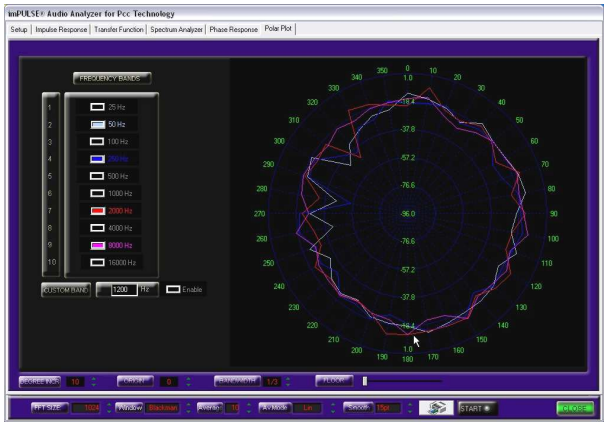
PHASE RESPONSE.



The screen that is in the superior part allows to make the measurement of the phase response of a certain box, the functions that are in this window are similar to the ones found in previous chapters.

POLAR DIAGRAM.

With this function, it is possible to obtain the polar diagram of the box at different frequencies.



5.3 PCC ADVANCED SERIES

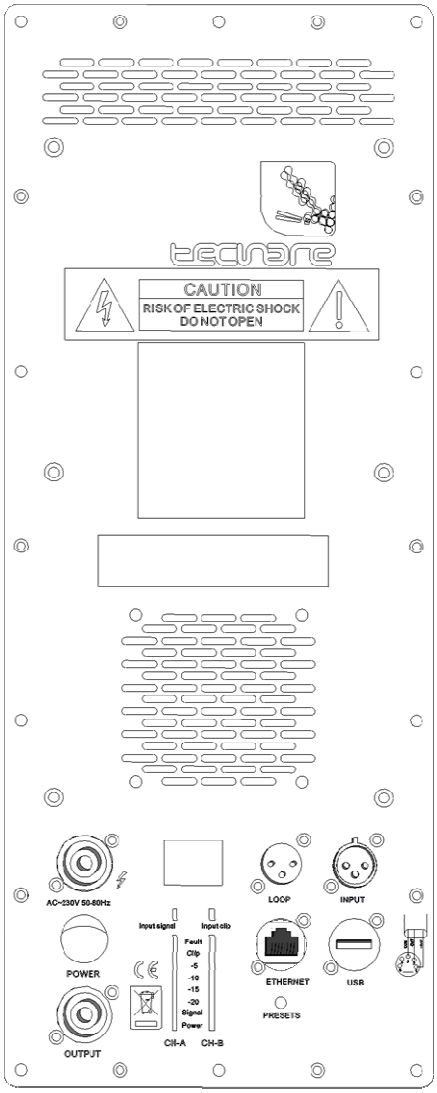
PCC Advanced series allows control in real time the parameters of each speaker individually or grouped as we decide, factors such as volume, graphic equalisation, parametric equalisation, crossover, box delay, clock settings, internal delays, compressor-limiters, check test, save and recall of presets, mute, transfer spectrum analysis, real time analyzer spectrum control, phase check…

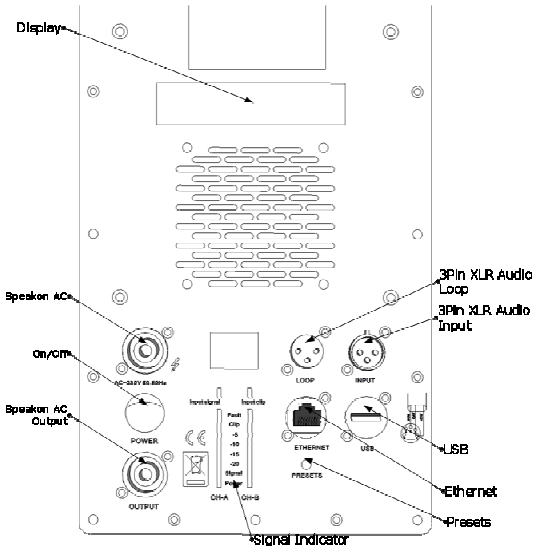
5.3.1 Main Features

- Ethernet control.
- 10 built in presets without the use of the software.
- Unlimited presets storage in the PC.
- Input graphic eq.
- Parametric eq on each band (4 x 8 bands).
- General Delay.
- 4 band crossover.
- Gain control.
- Mute control.
- Check test.
- Buit in Analyzer.
- Real time control.
- Presets storage in the PC.
- Grouping.
- Acoustic center control, between bands.
- Compressor / limiter in each output band.
- Input compressor / limiter.
- Clock set

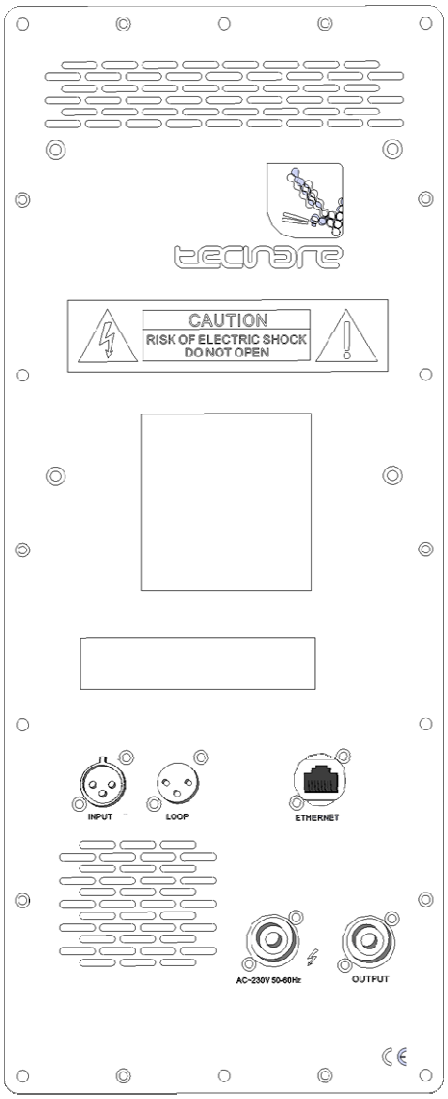
5.3.2 Back Panel

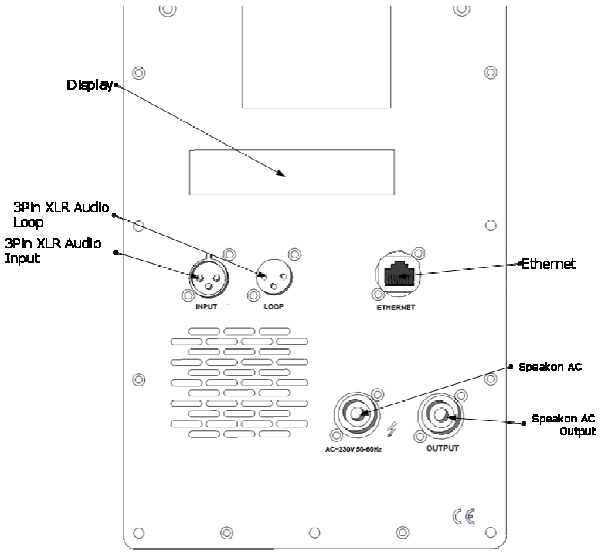
Advanced Series:


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AC~230V 50-60Hz
LOOP
INPUT
POWER
ETHERNET
USB
PRESETS
OUTPUT
CH-A
CH-B

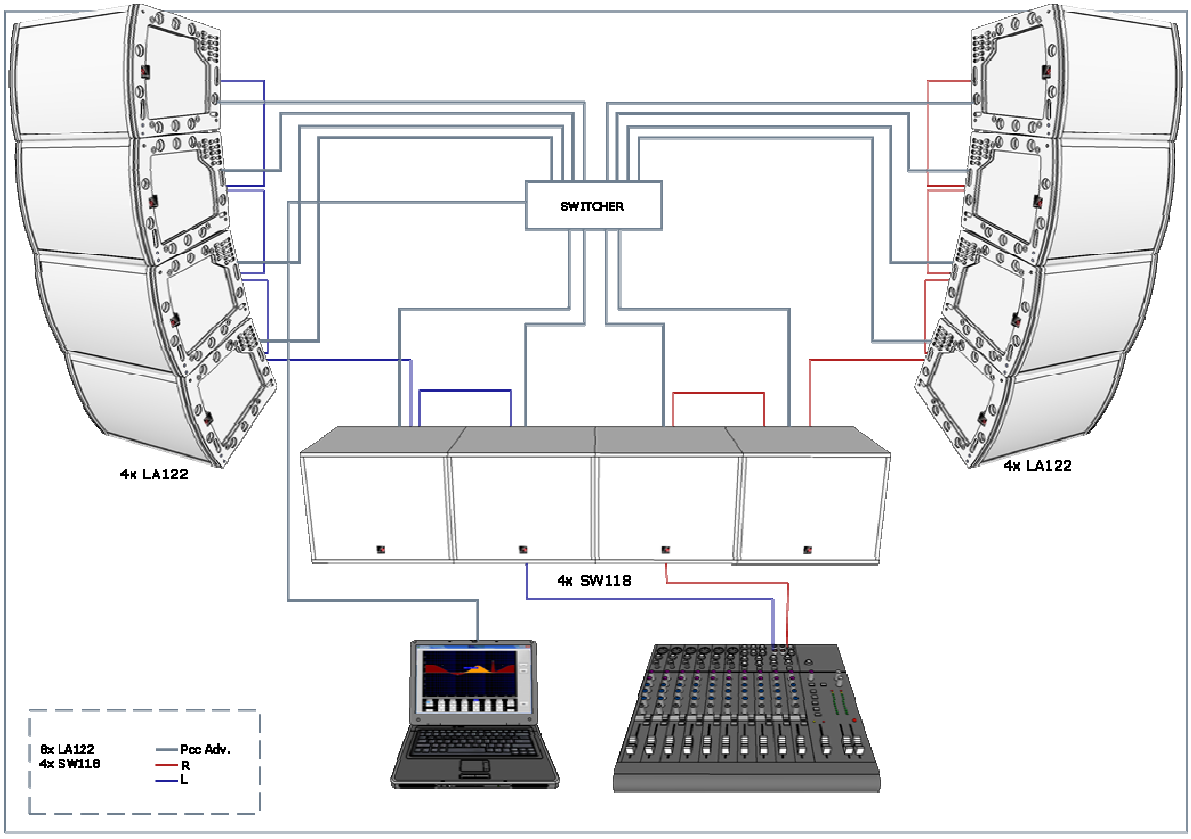

Display
Speakon AC
On/Off
Speakon AC Output
3Pin XLR Audio Loop
3Pin XLR Audio Input
USB
Ethernet
Presets
Signal Indicator

Cobranet Series:





5.3.3 Connection Diagram



5.3.4 Pcc Advaced Software User's Manual

5.3.4.1 INSTALLATION

1.- Click on Pcc12G_Setup.exe icon

2.- Follow the wizard instruction (for default installation you can press NEXT until the end)

* The estimated time required for first installation is about 1 minute.

* If asked by the wizard, restart the computer

3.- Connect the unit to the PC using the provided USB cable.

5.3.4.2 .-USING THE PCC CONTROLLER ADVANCED SERIES

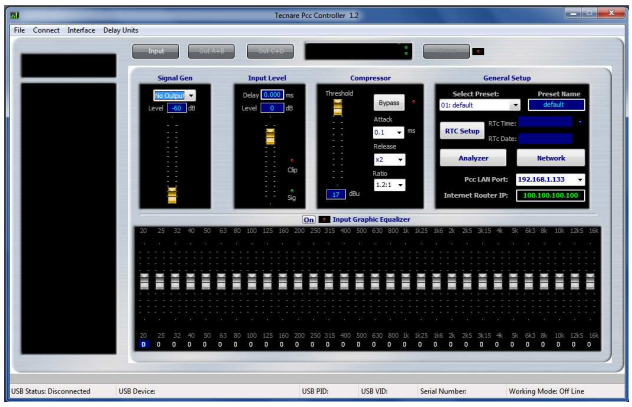
The Tecnare PCC Controller advanced series software application provides real-time control and configuration editing for the DPA-28X using a laptop or other PC-compatible computer.

In addition, the application provides control over each individual input channel: Gain, Graphic EQ, Compressor, main delay, and over each individual output channel: Crossover, 8 bands parametric EQ, phase inverter, mute, and delay. In addition, the application provides a powerful real time analyzer with pink noise generator capability.

Changes made in the PC software are immediately executed in the DPA-28X.

To start the application click on the PCC Icon on your desktop

It will appear a screen as is in the following image:



Open the Connect dropdown list and select On Line, this will connect your unit to your PC.

The user interface is divided into 4 sections:

- Menu Bar
- Network window
- Input section
- Output section

MENU BAR

The following menus are available in the Menu Bar at the top of the screen

FILE

- Load Preset: Click this option to Load an existing preset from your computer
- Save Preset: Save the current preset to a file
- Load Set: Click this option to Load a Set of 10 preset from your computer
- Save Set: Save the current set of 10 presets to a file.
- Exit: Exit the application

CONNECT

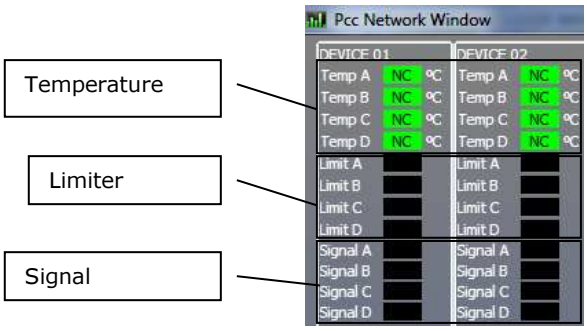
On line: Connects the computer to the unit.

DELAY UNITS

- ms
- meter
- feet

NETWORK WINDOW

When the PC is connected to the unit, the following information is shown at the upper left corner of the screen.

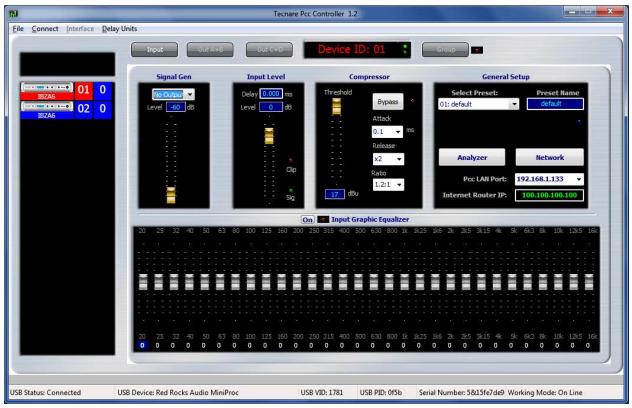


Temperature: It shows the temperature of each output channel.

Limiter: The limiter light show up when the audio limiter is acting.

Signal Indicator: When lighting a input signal is present.

INPUT SECTION

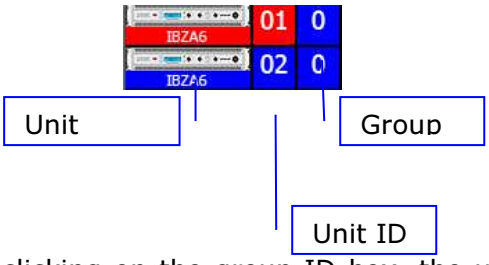


This section contains the following modules:

- Unit ID and grouping.
- Signal Generator
- Input Level
- Input Compressor
- General Setup
- 30 bands Graphic equalizer

UNIT ID AND GROUPING

It shows the units information connected to the PC, the active one is the one on Red. Double click to activate the unit.



By clicking on the group ID box, the user will be able to assign each unit to a group.

SIGNAL GENERATOR

By selecting active in the dropdown list, a pink noise signal is generated by the 8 output channels.

The output level is controlled by the fader control.

INPUT LEVEL

Main delay in ms, meters or feet can be adjusted in this section. The input level is adjusted by the fader control, it provides signal and clipping indicators.

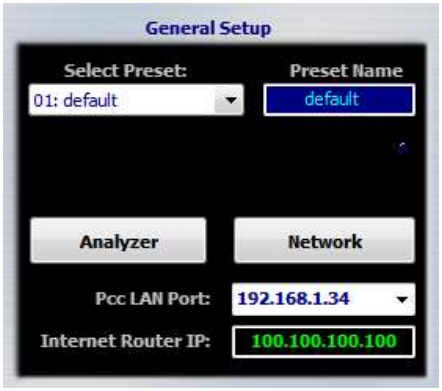
INPUT COMPRESSOR

The input compressor has four controls: Attack, Release, Threshold and Ratio. Click on the dropdown list to adjust each parameter. Click the Bypass button to turn it off.

About Compression: A compressor is used to reduce or limit transient peaks in a signal. As the input level to the compressor increases, the output level increases linearly until the threshold point is reached. After that point, the output level no longer increases linearly, but increases at a reduced rate that is determined by the ratio setting.

- Threshold: This control determines the level at which the compressor begins to act on the incoming signal. It is calibrated in decibels, with a range from –-40.0 dBu to 17 dBu.
- Attack: This determines how fast the compressor reacts once the threshold has been exceeded. It is calibrated in milliseconds, with a range from 1 ms to90 ms.
- Release: This determines how fast the compressor turns off once the signal falls below the threshold. It is calibrated in milliseconds, with a range from 10 ms to 2500 ms (2.5 seconds).
- Ratio: This determines the change in output level as a function of the change in input level, once the threshold has been exceeded. It is calibrated in decibels, with a range from 1.2:1 (off) to 30:1.

GENERAL SETUP



The following controls are available in the general Setup module:

- Presets
- RTC Setup
- Analyzer
- Network
- Pcc LAN Port
- Internet Router IP

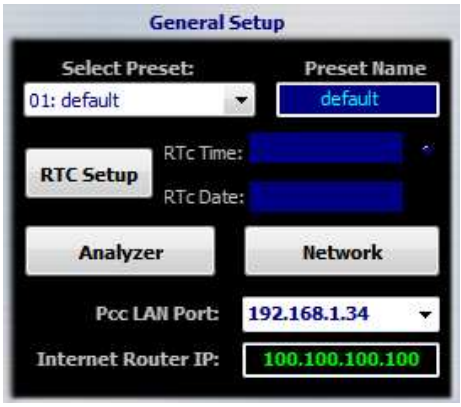
PRESETS

By pulling down the Select Preset dropdown list, 10 different preset saved in the unit can be selected.

Changes made in the PC software are immediately executed in the DPA-28X, and stored in the selected preset.
A Preset name can also be stored.

RTC SETUP

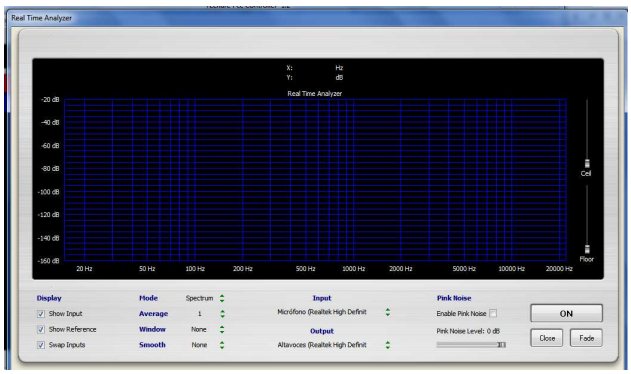
By clicking Ctrl+Alt+P the RTC Setup module will be shown.



This module is a time counter clock that allows the user to control when and how the unit has been working.
To Unlock this feature, click on RTC Setup, send to Tecnare the code shown on the screen, and introduce the unlock code you will have back from Tecnare.

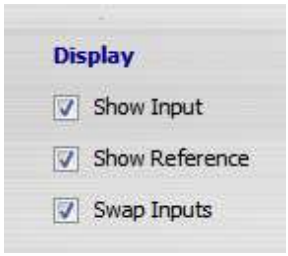
ANALYZER

This toggles the audio Analyzer window open and closed.



The following information is available in this window:

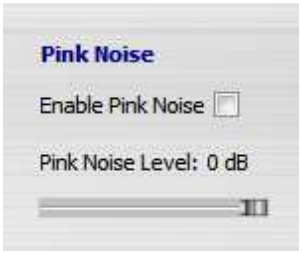
- Display: Allows the user to show/hide the input and reference signals.



- Parameters:

- Mode: The audio analyzer allows the user to work on four different modes:
  - Spectrum Analyzer
  - Transfer Function
  - Phase Response
  - Impulse Response
- Average: Eight different time average can be selected: 1, 5, 10, 20, 30, 50, 80 and 120.
- Window: Signal Windowing by None, Hamming, Triangular, Hanning and Blackman
- Smooth: Is the frequency average. None, 1/3, 1/6, 1/12, 1/24 Octave.
- Input and Output: Allows the user to choose the PC input and output device.

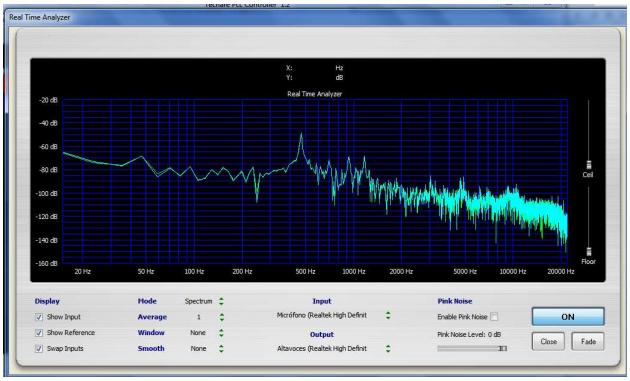
- Pink noise: Enable the pink noise generator. Note that the Pink noise can only be enabled when the analyzer is turned Off.



- Buttons:
  - On: Turn on and off the analyzer
  - Close: Close the analyzer window
  - Fade: It makes the window analyzer 50% transparent, so the user can see the window behind.

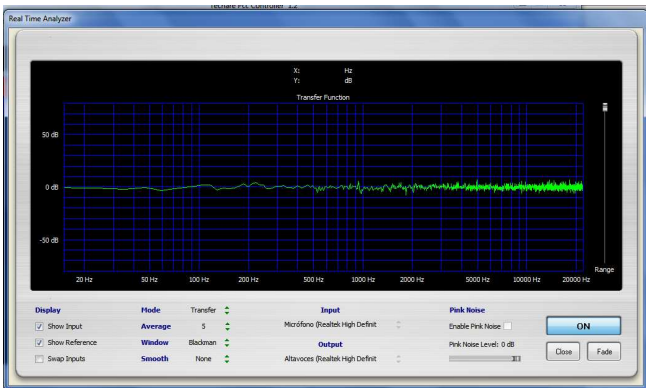
SPECTRUM ANALYZER

This feature allows the user to visualize the spectral components either of the input signal (given by a microphone connected to the PC) or the reference signal (output) it is also possible to visualize both signal simultaneously.



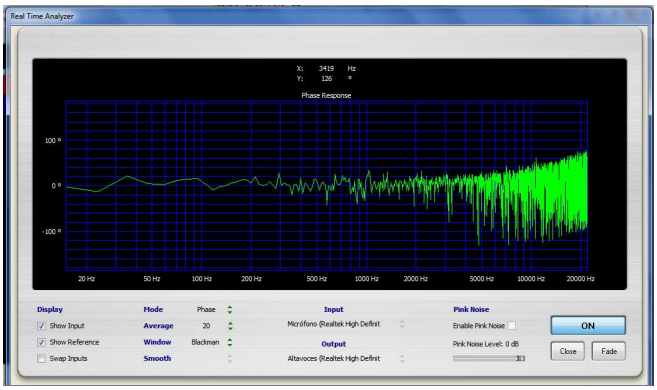
TRANSFER FUNCTION

It shows the systems transfer function, meaning the difference between the signal from the output of the DPA-28X to the microphone input signal.



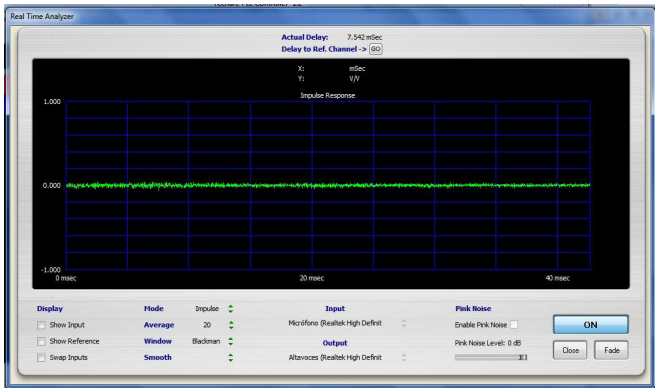
PHASE RESPONSE

It allows the user to analyze the phase response of an installation



IMPULSE RESPONSE

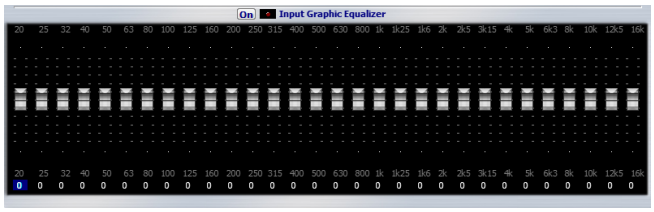
This tool provide the spectrum impulse response of a certain room.



NETWORK

This button toggles the network window open and closed. (Refer to 2.3 for more information)

GRAPHIC EQUALIZER

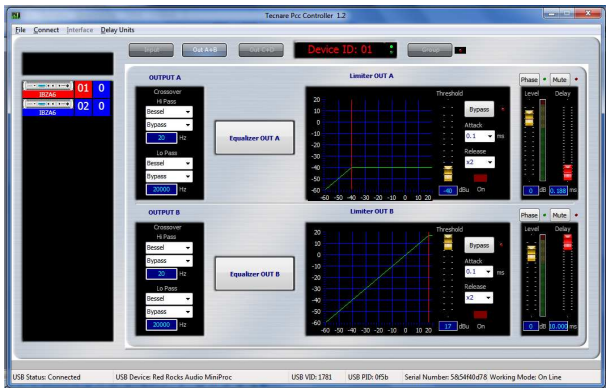


Click the ON button to turn the Graphic EQ on and off

Click and drag on the slider fader to adjust the equalization from -15dB to +15dB.

OUTPUT SECTION

The user can manage the output section by clicking on Out A-B and Out C-D buttons.



This section contains the following modules:

- Crossover
- Graphic EQ
- Limiter
- Level
- Delay
- Phase inverter
- Mute

CROSSOVER

This section contains two crossover filters per output.

Three different kinds of filters can be selected:

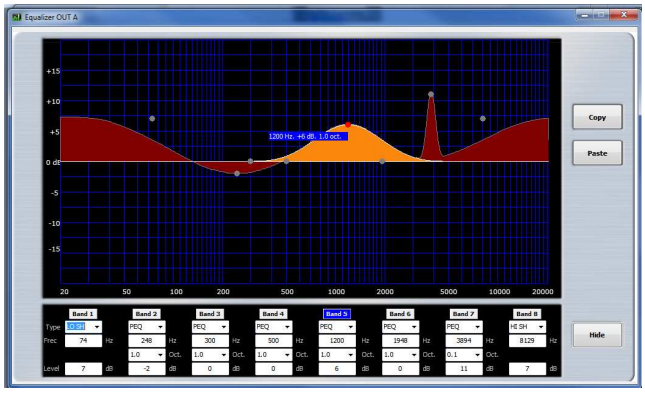
- Bessel
- Butterworth
- L-R

The order of the filter can be selected by pulling down the Bypass dropdown list, Second Order filter (12dB/Octave) and Fourth Order filter (24dB/Octave) are available.

Filter cut-off Frequency ranges from 20 to 20,000Hz in 1Hz steps

PARAMETRIC EQ

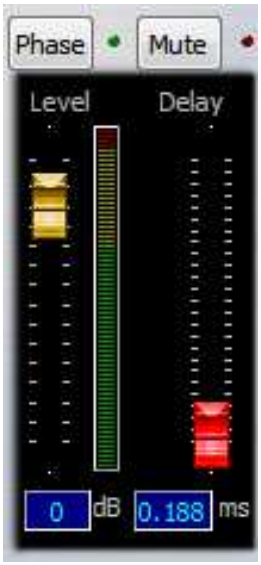
Eight bands parametric EQ can be opened by clicking on the Equalizer Out X button.



Four different settings can be adjusted by the user per band.

- Type: The user can select Hi Pass, Low Pass or band filter

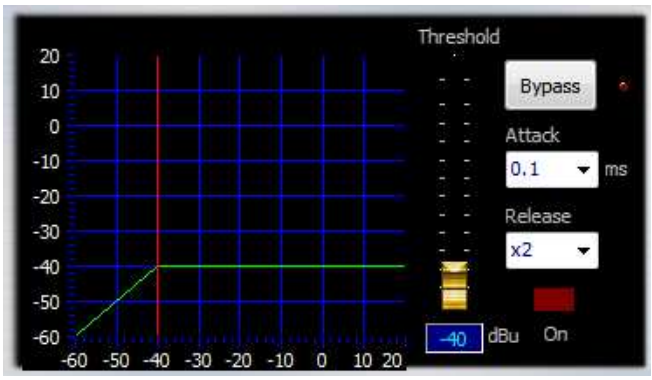
- Frequency: Ranges from 20 to 20,000Hz in 1Hz steps
- Bandwidth: Ranges from 0.1 to 2 Octaves
- Level: Ranges from -25dB to 25dB



The user can also modify the equalization (Frequency and level) by clicking and dragging the grey points on the screen, the selected band will turn from red to orange.

To copy the desire equalization to other output just click on Copy button, go to the desire output parametric EQ and click on the paste button.

LIMITER



- Threshold: The THRESHOLD controls are continuously adjustable from -40dBu (maximum limiting) to 17dBu
- Bypass: Turn the module in bypass mode.
- Attack: Ranges from 0.1 to 90ms
- Release: Ranges from 2x to 32x

LEVEL/DELAY

- Level: The output level can be adjusted from -60dB to 12dB, unit gain is at the 0dB position.
- Delay: Ranges from 0 to 10 ms
- Phase inverter.
- Mute.

5.4 RIGGING

5.4.1 Safety

Flown Systems

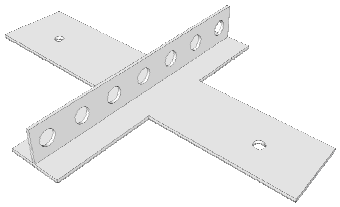
- Installation and set up must be carried out by qualified personal.
- Inspect the all the rigging components for damage before assembly. Do not use damaged parts. Contact your supplier for replacements.
- Ensure that motor hoists, hoist control systems and ancillary rigging components are currently certified as safe and that they pass a visual inspection prior to use.
- Ensure the work area is isolated from public access.
- Do not leave the system unattended during the installation process.
- Do not leave any object on top of the system. It may fall when the system is flown and is likely to cause injury.
- Secondary safety steels must be installed once the system has been flown to the operating height.
- Ensure that the system is secure and prevented from pivoting around the motor hoist.
- NEVER use other item than Tecnare accessories.
- When flying outdoor systems ensure that the system is not exposed to excessive wind or snow loads and is protected from rainfall.
- When deploying Tecnare Systems always wear protective headwear, footwear and eye protection
- Ensure that all local and National regulations regarding the safety and operation of flying equipment are understood and adhered to.

Ground Stacking

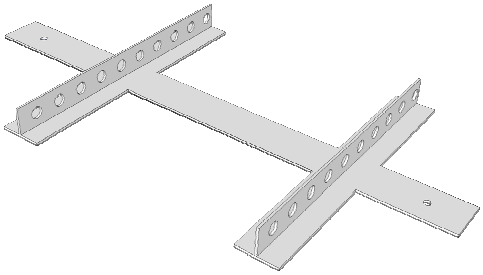
- Always employ safe lifting procedures and never attempt to build stacks without sufficient personnel and equipment.
- Never allow anyone to climb onto a ground stacked PA system.
- If the stage surface slopes, ensure that the system is prevented from sliding forwards due to vibration.
- For outdoor systems ensure that the system is protected from wind forces which might cause the ground stack or become unstable.
- Apply the same attention to all safety matters when de-stacking systems.

Accessories are:

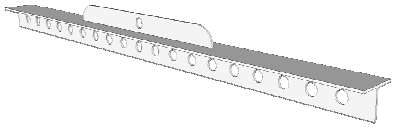
- FBV_12/FBV_M15



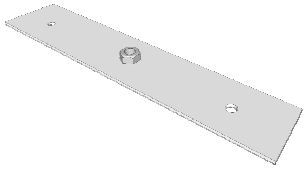
- FBH_12/FBH_M15



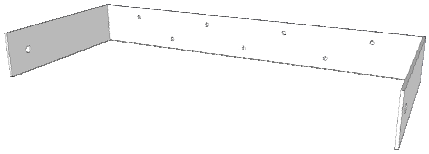
- CV-12/M15



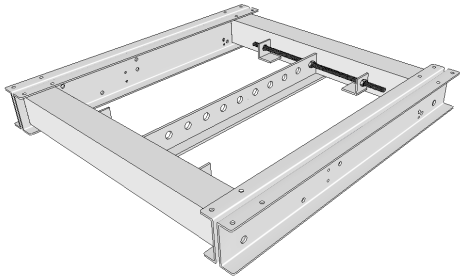
- LP_12/M15



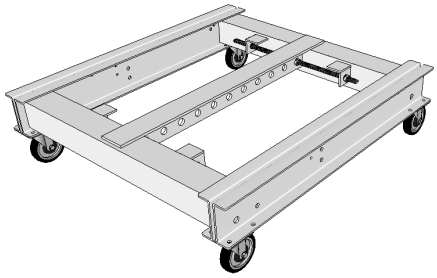
- L_12/M15



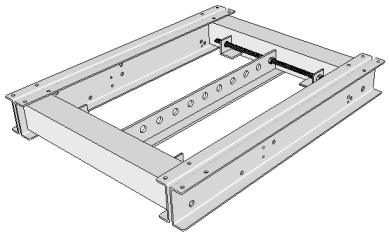
- HV-12/M15



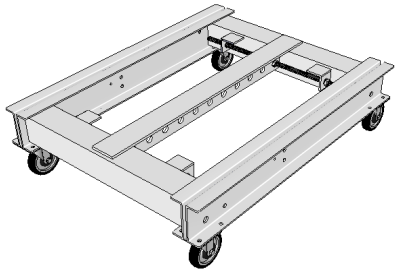
- HS-12/M15



- HV-208



- HS-208



5.4.2 Single AMS12/AMS15

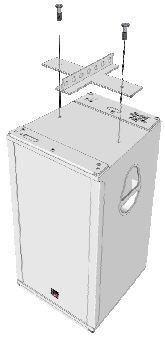
5.4.2.1 Flown Vertically

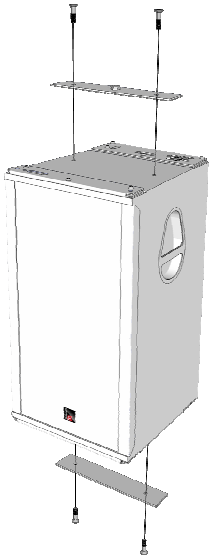
Items required:

- 1x Flying bar for AMS12 or AMS15 (FBV_12 or FBV_M15)

Procedure:

- Remove the two up-side screws from the box.
- Place the FBV_12 or FBV_M15 and put the screws back.





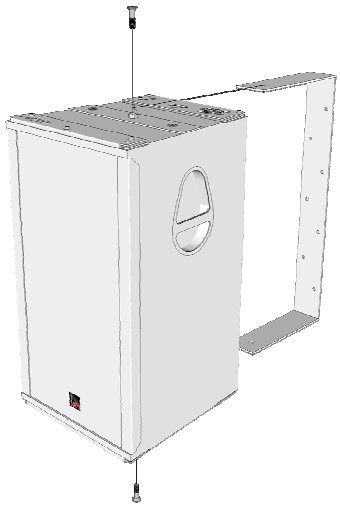
5.4.2.2 Mounted On a wall.

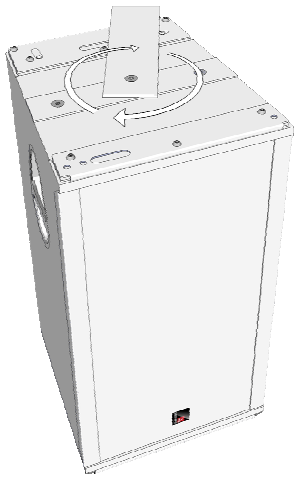
Items required:

- LP_ 12 or LP_M15
- L_12 or L_M15

Procedure:

- Remove the two up-side screws from the box.
- Place the LP_12 or LP_M15 and put the screws back.
- Hold the L_12 or L_M15 to the wall.
- Place the unit into the L_12 or L_M15, place the upper and bottom screw.

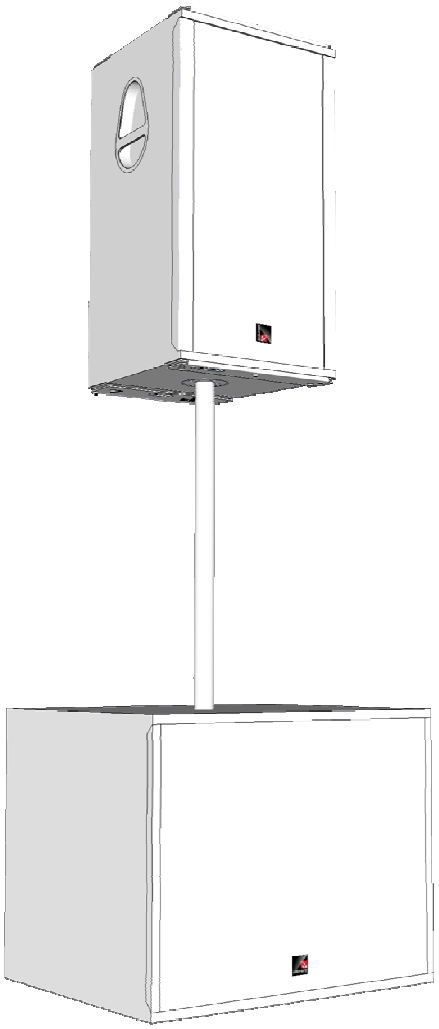




5.4.2.3 On wind stand or on SW118

Items required:

- 1x Wind stand



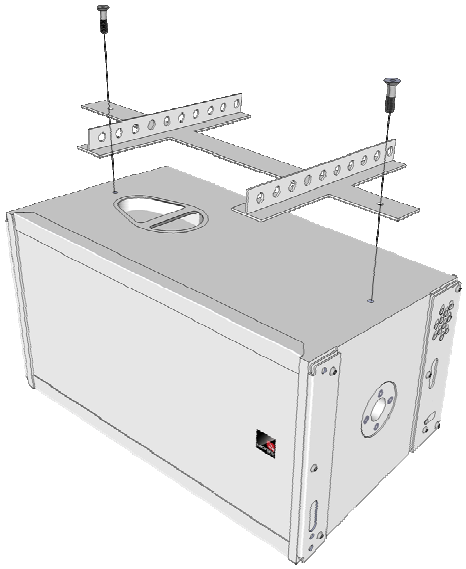
5.4.2.4 Flown Horizontally

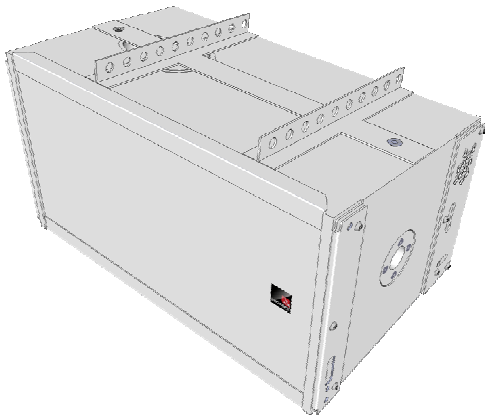
Items required:

- 1x Flying bar for AMS12 or AMS15 (FBH_12 or FBH_M15)

Procedure:

- Remove the two up-side screws from the box.
- Place the FBH_12 or FBH_M15 and put the screws back.





5.4.3 Tree or more AMS12 and AMS15

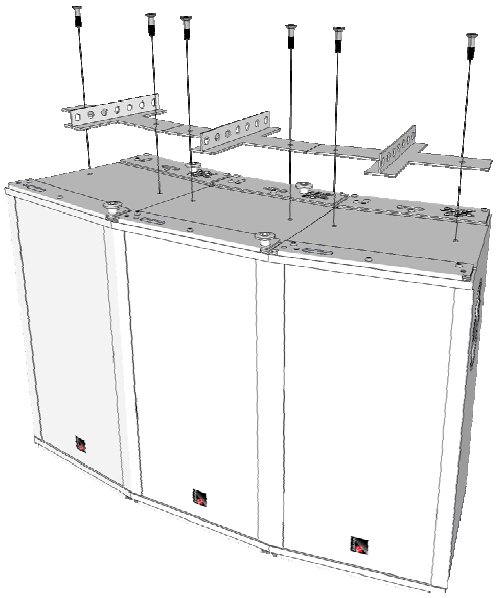
5.4.3.1 Flown Vertically

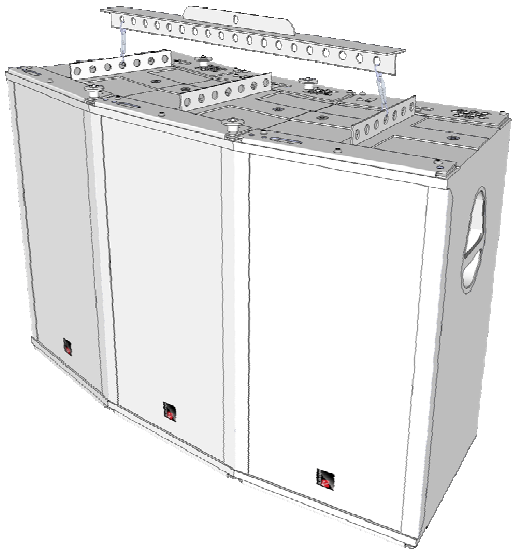
Items required:

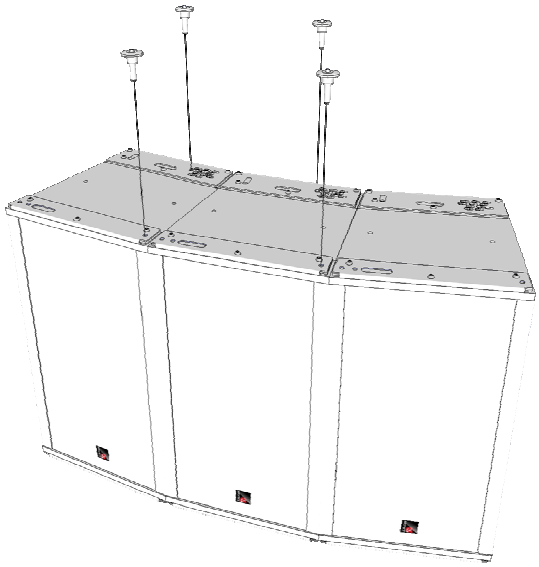
- Bumper (CV-12/15)
- Nx FBV_12/M15
- 4Nx Pin Locks

Procedure:

- Align the boxes with the desire angle using the pin locks.
- Remove the two up-side screws from each box.
- Place the FBV_12 or FBV_M15 and put the screws back







5.4.4 Array and AMS Flown Horizontally.

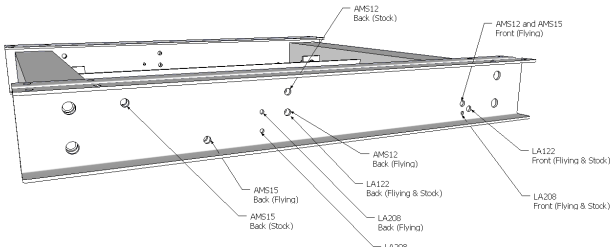
The following procedure is valid for the LA and AMS series.

Items required:

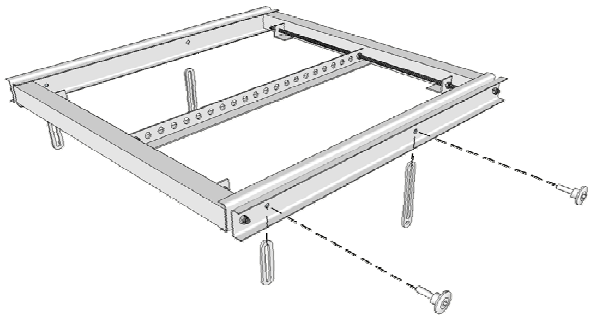
- HV-12 or HV-M15
- 4Nx Pin Locks (+2 for bumper)

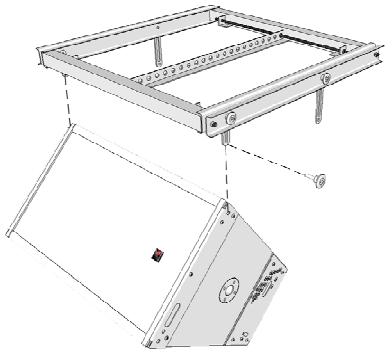
Procedure:

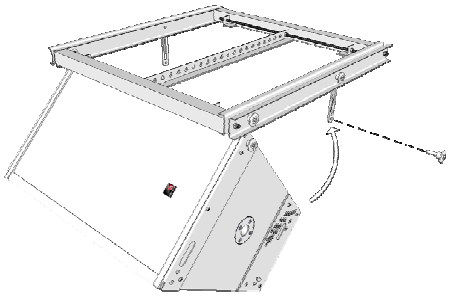
- Select the box and configuration to be used.

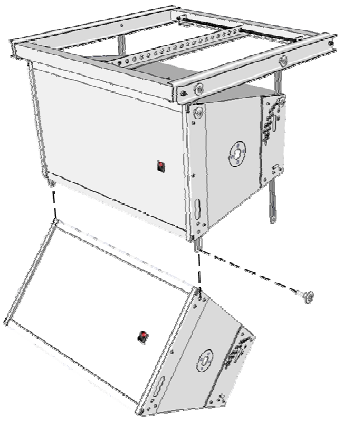


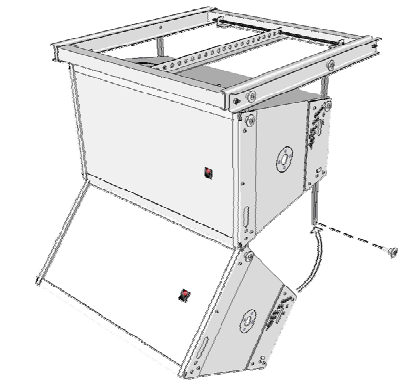
- Install 4 link bars to the Bumper using the screws or pin locks included in the package.
- Connect the first cabinet to the front link bar and then pull up the back of the unit until the desired angle is obtained.
- Repeat the last step for the rest of the cabinets.
- The secondary safety suspension must be independent of the primary suspension and must be able to carrying the total system weight

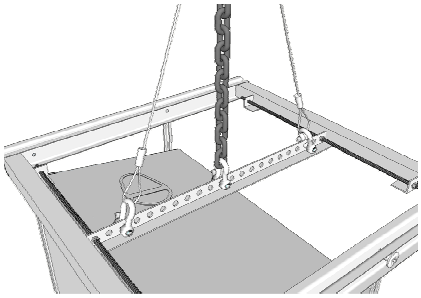


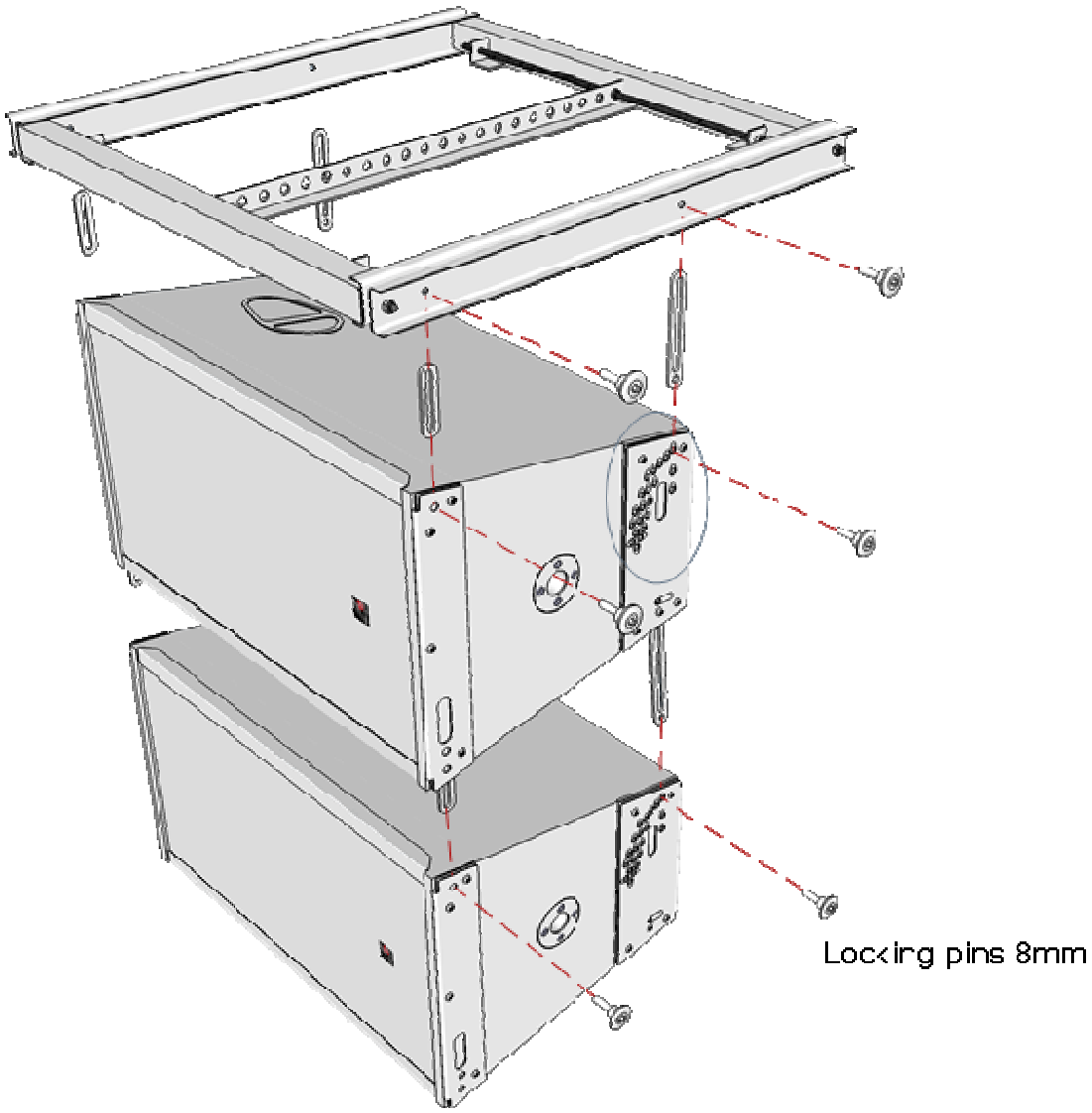




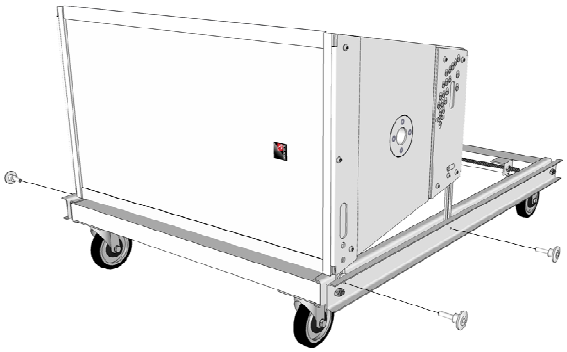







Locking pins 8mm

5.4.5 Array/AMS series Ground Stack



Items required:

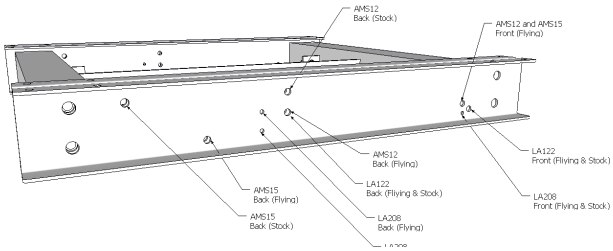
- HS-12, HS-M15 HS-312 or HS-208
- 4Nx Pin Locks

Procedure:

Maximum number of cabinets:

IMPORTANT: The number of boxes and the angle between them must be in such a way that the total deep length of the boxes DO NOT EXCEED the maximum length of the bumper.

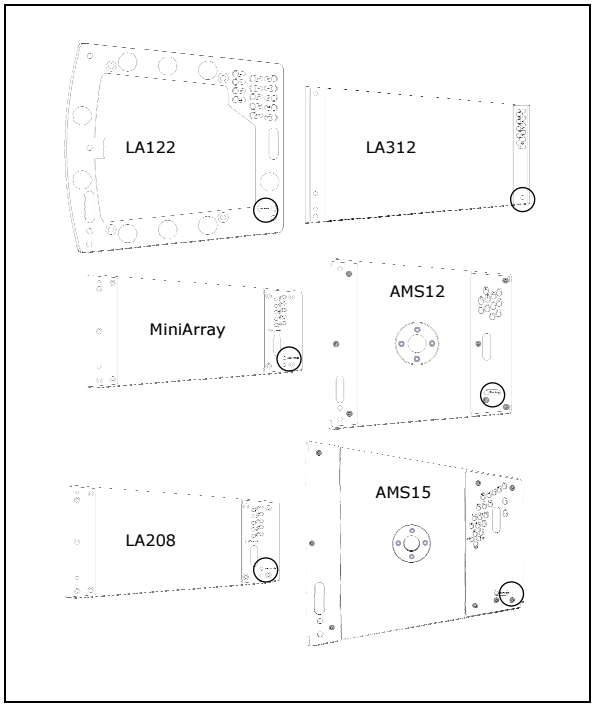
- Select the box and configuration to be used.

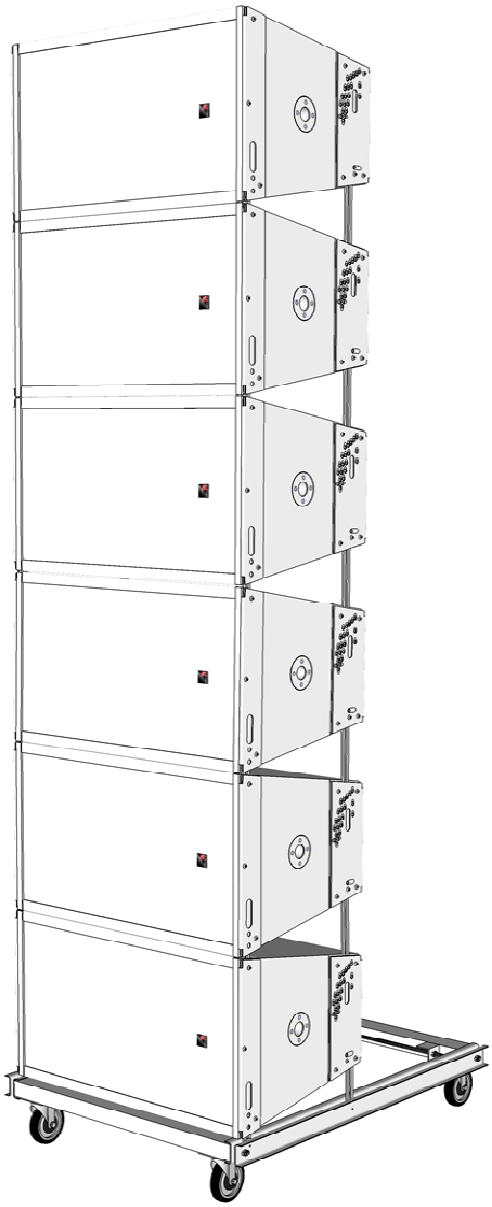


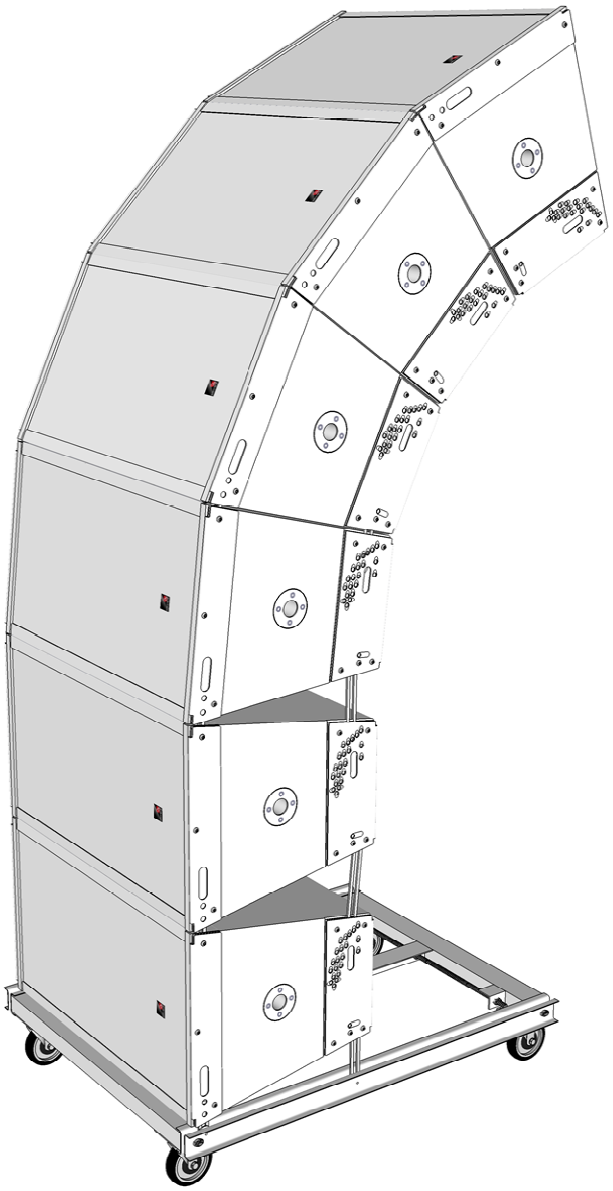
- Install the first cabinet on the bumper using the screws or pin locks included in the package, the connection must be placed to the stack mode.

- Connect the second cabinet to the front link bar and then adjust the angle by introducing the back link bar.
- Repeat the last step for the rest of the cabinets.

Select the stack position according to the speaker used:







5.4.6 LA312 RIGGING USING HV-312

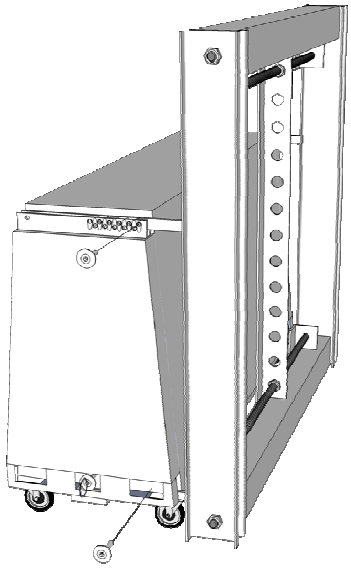
Setup 1

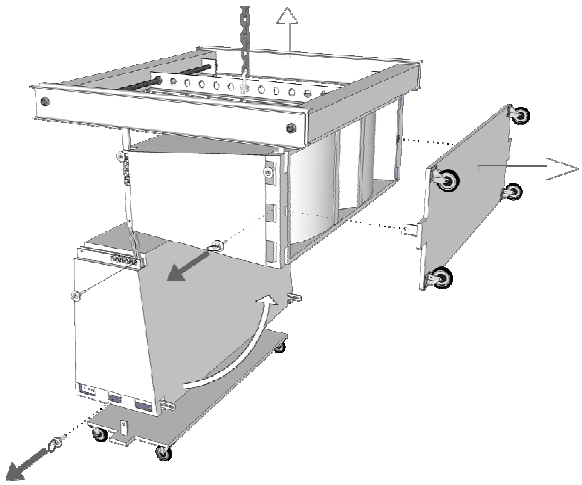
Items required:

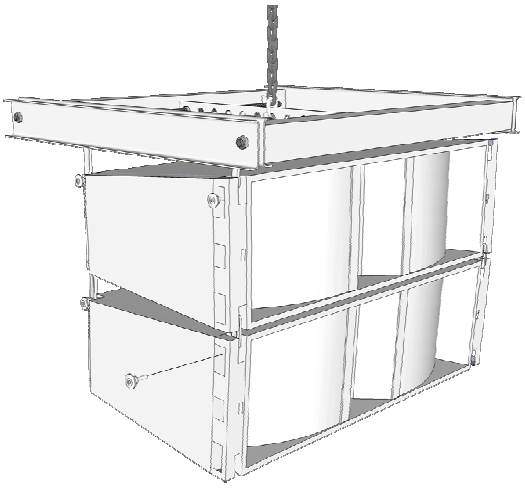
- HV-312 Plataform
- 4Nx Pin Locks (+2 for Bumper)

Procedure:

- Install the first cabinet on the bumper using the screws or pin locks included in the package. Elevate the system until the next cabinet height is reached.
- Connect the second cabinet to the front link bar. Adjust the angle by introducing the back link bar and remove both Tec-P-312 units.
- Plug the front link bar.
- Repeat the last step for the rest of the cabinets.







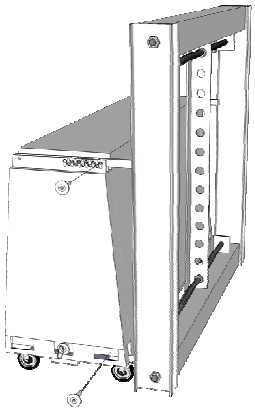
Setup 2

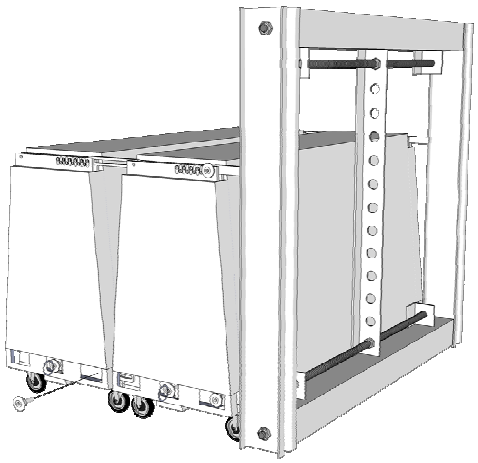
Items required:

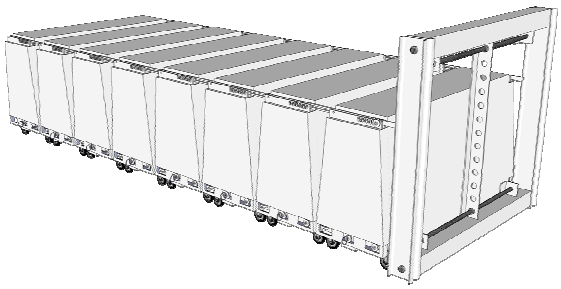
- HV-312
- 4Nx Pin Locks (+2 for Bumper)

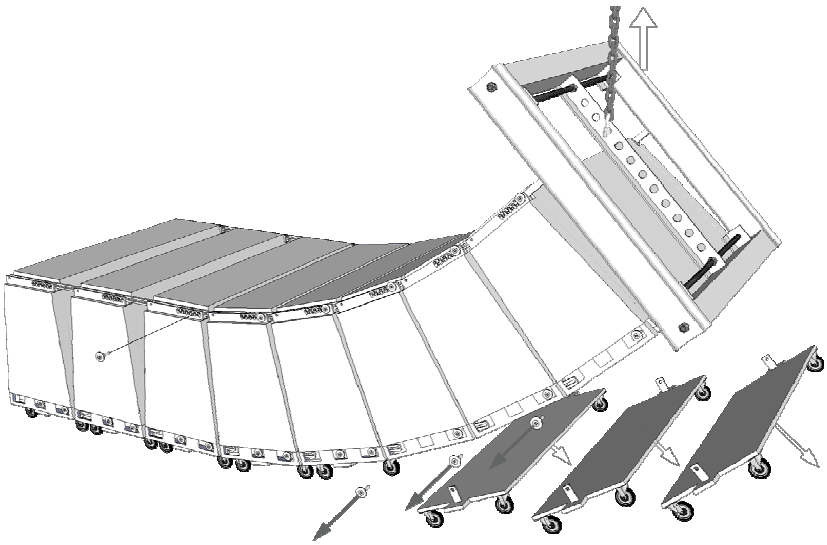
Procedure:

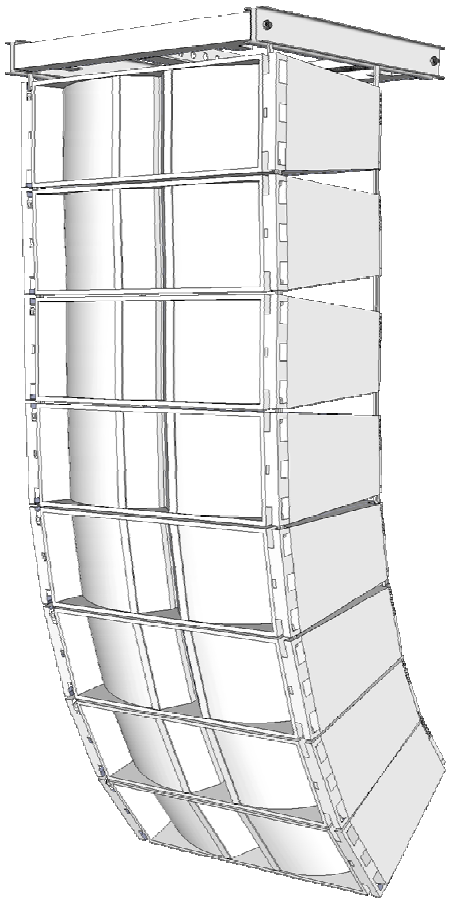
- Install the first cabinet on the bumper using the screws or pin locks included in the package.
- Connect the rest of the cabinets to the front link bar. Adjust the angle by introducing the back link bar and remove both Tec-P-312 units.
- Elevate the system until the next cabinet reaches the desire angle, plug the back link bar.
- Remove the pin lock that holds the Tec-P-312 unit and remove it.
- Repeat the last 2 step for the rest of the cabinets.











6 Contact

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